

**AMUR FALCON CONSERVATION AND SUSTAINABLE LIVELIHOODS:
LESSONS LEARNT FROM PANGTI VILLAGE, NAGALAND**

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IN

ECONOMICS

BY

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DECLARATION

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Chapter 1

Introduction

1.1: Introduction

In recent decades, new interests have emerged in economics with focus on the environment, natural resources and the ecosystem. Economic advancement since the industrial revolution has extracted a heavy cost on the environment in the form of pollution to air, water, soil, species loss, loss of habitats of different plants and animals, etc. The much talk about climate change is only one of the many adverse impacts of economic activities on the environment, with most of the driving forces of threat to the environment being economic in origin – deforestation, overharvesting of resources, discharging industrial effluents, improper use of resources, and so on. The sustainability of resources and the environment carrying capacity is further threatened with increasing economic production with in fact almost everyday activities taken for granted such as switching on an AC, using a computer or a refrigerator, taking a vehicular ride, etc. all causing harm to the environment. While advancement in science and technology and changes in lifestyles can offset the damages caused to the environment and the ecosystem, issues regarding the cost and adoption of technology, as well as lack of awareness means there is still a long way to go for a fully sustainable development.

All economic production relies on raw materials which are inputs as well as elements of ecosystem structure, the building blocks of ecosystems, and energy provided by nature (Farley, 2009). The transformation of ecosystem into economic output and the processes involved impacts the functioning of the ecosystem. The processes of economic production are such that they wear out, fall apart and becomes a waste when it returns to the ecosystem. This waste causes pollution and when it is released more rapidly than the capability of the ecosystem to absorb them, the function of ecosystem is threatened. Therefore, to understand the underlying forces behind the loss of ecology and its degradation, there is need to look through an economics lens at conservation which eventually can help with allocating resources efficiently toward conservation programmes. “It can also help in

determining how much ecosystem structure should be converted to economic output, and how much should be conserved to maintain vital ecosystem services” (Farley, 2009). Hence, Conservation and economics cannot be taken as mutually exclusive of each other because both are necessary to achieve optimal and sustainable conservation and economic policies.

While there may be conserving attitudes in different fields, their concerns and priorities differ from one another. Take the case of conservation, according to Orr (1991), the concerns of conservation are different between biologists and economists. Biologists pay more attention to the biosphere and are more concerned about the threat of collision among economic growth, environmental carrying capacity and population while economists’ main concern is that of getting the prices right and letting technology and market do the rest. Better economics can be created by joining efforts of economists and conservation biologists – a fusion of economics, ecology and reverence for life.

1.2: Defining Conservation Economics

According to the Conservation Economics Institute, “Conservation economics is the investigation of how human welfare and the natural environment interact over time, with an eye towards the future. Specifically, conservation economics can be defined as the valuation of maintenance and repair of the natural environment for opportunities in the future. Conservation economics builds on the most operational and solution-oriented approaches from environmental economics and ecological economics, understanding that sustainability must be approached at local and global scales” (Conservation Economics Institute, 2014).

There is positive correlation between conservation and economics not just in the approach of sustainability but also in funding too. Research concludes that economic growth and conservation funding are highly correlated- those who have sufficient affluence funds conservation. Dyke (2008) suggests that conservation efforts in the long run cannot continue without value expressed in economic behaviour. He comments that the one basic tension among the many between economy and conservation is this- the existing tension between the generation of finances for the cause of conservation and the economic

processes that represent or are responsible for some fundamental causes of ecological loss and biodiversity degradation.

1.2.1: Conservation of Migratory birds

Conservation in itself is challenging because it involves social and economic problems. Conserving migratory species is even more challenging because migration itself is risky owing to its varied habitat and complex pattern. There are problems that are likely to occur when conserving because there is need to preserve the habitats at stopover, breeding and wintering sites, and there are risks to human persecution by hunting. There can be different preferences for conservation according to the different stages of economic development. For conservation to be effective, it is required to understand both the socioeconomic dynamics involved and the ecology underlying the threats.

The requirement of resources to conserve and foregoing commercial opportunities can prove to be costly in a conservation effort or programme because it also requires the reorientation of economic activities since migratory birds need to be conserved at their stopover sites, breeding and wintering grounds. Hence, the species should be optimally managed by cost-coefficient wherein conservation benefits are greater than conservation costs. Maximizing a species welfare depends on a species survival, which depends positively on the conservation costs and on the conservation effort at stopover migration. Increased conservation effort increases the species survival and welfare but diminishing marginal utility comes into play and the returns to conservation efforts diminish. The population size of the species determines the rise and fall of marginal effectiveness (Clarke, 2000).

1.2.2: Economic value of birds

The need to conserve birds does not only sprout from their role in the food chain, pollination and aesthetic value. They play an important role in the economy, especially in their capacity to destroy insects which cause harms to crops and plantations. The destruction of birds will mean multiplication of crop-destroying insects enormously. In USA, the assessment made on the species of insects and destruction of trees was reported by an entomologist of New York. The report recorded a list of 176 species of insects that

destroy trees like apple, pear, peach, cherry, plum, etc. The studies made on the list of insects that destroy trees and vegetation are numerous. There are losses of millions of dollars annually in monetary value caused by the pests. White midge, Hessian fly, cinch bug are some of the pests among many. Considering the losses caused by the pests, the fact that birds consume them steeps up the importance of birds to prevent injury to crops and other vegetation (Wenninger, 1909). Reed (1914) made an observation that a cuckoo can consume hundreds of caterpillars daily, while a chickadee can consume up to five hundred insects, or worm eggs. A lark consumes grasshoppers, locusts and cricket which makes up to about 29 percent of all their food. All these points to the fact that each bird plays their role in the economy of nature. This economic value of birds give rise to the need to protect them, not just for the balance of the ecosystem but also for economy. One important step towards protecting birds can be educating people to help them realize the economic value of birds. The knowledge of the value of birds can help preserve and lessen destruction (Wenninger, 1909).

1.3: History of hunting wild animals and conservation in Nagaland

The history of hunting in Nagaland can be traced to the distant past. Wild meat served as a source of protein and a livelihood source. Yet another practical reason for hunting, among the Nagas whose mainstay of the economy is agriculture, is to prevent wild animals and birds from damaging agricultural crops (Lohe, 2011). With the realization that the number of wildlife population had gone alarmingly down, some people had initiated conservation programmes and also raised awareness to stop hunting.

Some early examples can be seen dating back to 1983 in a Chakhesang tribal settlement, Lozaphuhu, where conservation of a forest patch was resolved, which gradually added more forest patches and then a total ban on hunting, and later on came to be considered as a wildlife reserve. In 1998, Khonoma village under Kohima district was declared as Khonoma Nature Conservation and Tragopan Sanctuary which restricted hunting and resource use. Other villages under the same district like Sendenyu, Tuophema also followed suit. Chishilimi, under Zunhebuto district also banned hunting, along with banning on use of explosives to catch fish. In Phek district, the Chakhesang Public Organisation (CPO), comprising of 80 villages passed regulations to ban hunting

seasonally and stop indiscriminate forest fires in their respective areas. Initiatives like this encouraged the people to stop hunting and raised awareness on the impact of hunting on the environment (Kothari and Pathak, 2006).

1.3.1: Role of government on hunting

As seen from the examples, we can note that the government plays a lesser role in setting the regulations on hunting. The Forest Survey of India's (FSI) State of Forest Report 2015, recorded that the total forest cover in Nagaland State is around 12, 966 sq.km which account for 78.20 % of the total geographical area of the State and constitutes about 11% of ownership to the state and 88% to the private. The individuals and communities have a bigger share in the regulatory role compared to the government. But that doesn't belittle the role of the government as there are forests under the control of the Government and wildlife sanctuaries and national parks set up like Puliebadze and Intanki in Kohima district, Rangapahar in Dimapur district and Fakim in Tuensang district. The Government also implemented the Wildlife protection act, 1972 as amended in 2002. Given the bigger share of ownership of the forests to the individuals and communities, there are a lot of community conservation initiations like, in the village of Ghukiye, which banned certain hunting tools. Khonoma, the green village is another instance where hunting is banned in the entire village throughout the year. Pangti village is also another instance. The government, NGOs and the community came forward to conserve the bird Amur Falcon which was once massacred to its near extirpation.

1.4: Nagaland: Falcon Capital of the World

1.4.1: Amur Falcon: Basic Information

Amur Falcon is a small bird of prey which belongs to the Falcon family. Their population consists of more than 1 million breeding individuals throughout the world. It is a subspecies of the red-footed falcon or the eastern red-footed falcon because of their differences in the plumage, body size, etc. is classified as a separate species. Amur Falcon is also known by the names of eastern red-footed kestrel, eastern red- legged falcon, Manchurian falcon and Manchurian red-footed falcon (www.arkive.org). Amur Falcon is only one of the few birds of prey which have white claws. The length varies from 26-30 cm. The male weighs from

97-155 gm and the female from 111-118 gm. They mainly feed on insects - locusts, grasshoppers, flying termites and beetles and migrating dragonflies.

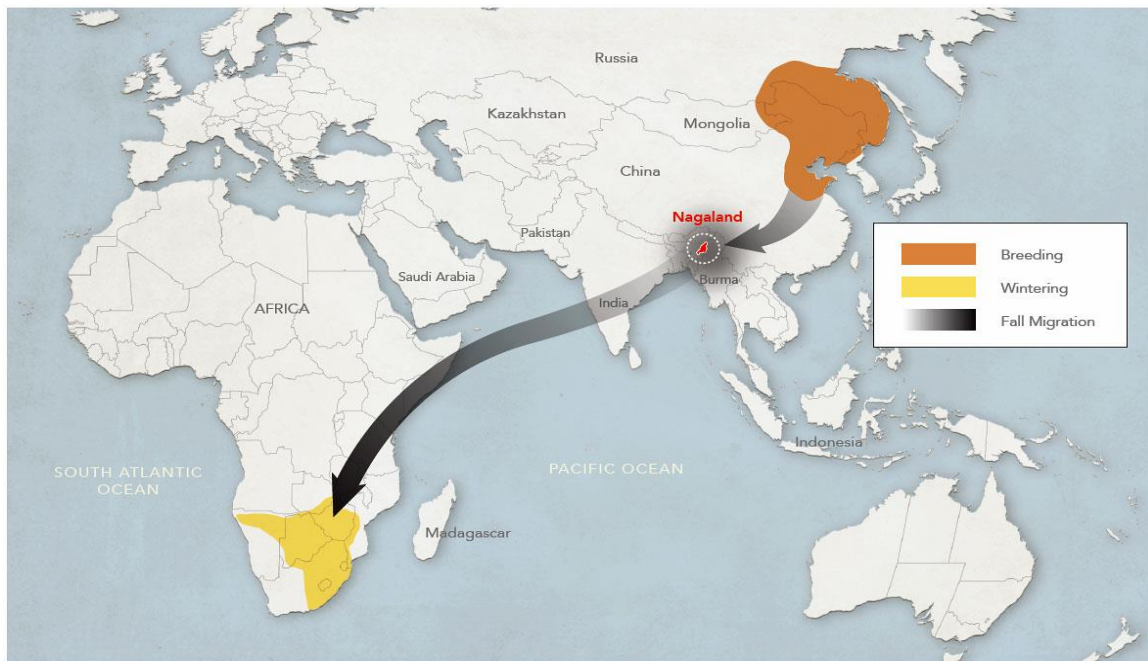
The Falcon known as one of the world's greatest, strongest travelers, travels one of the longest migration routes among all birds travelling an annual round-trip of 22,000 km. They travel from eastern Asia (Russia and China) all the way to southern Africa crossing the Arabian Sea, and back every year during their migration. In late August to September, these raptors leave the breeding area in Asia (Siberia) and stops in parts of Northeast India and Bangladesh for several weeks to rest and feeding on migrating dragonflies and other insects before resuming their journey. They cross 14 countries, 2 continents and one ocean. They arrive in their Southern African winter range in November-December. From Nagaland, it takes two months, including three and a half days' non-stop flight across the Arabian Sea.

Image 2.1: Amur Falcon



Source: Johan van Noordwyk, 2012

Map 2.1: Migration journey Amur Falcon from Eastern Asia to Southern Africa



Source: Birdlife International Data Zone

1.4.2: The flight of the Amur Falcons and conservation efforts

The Amur Falcons roosts in three villages in Wokha viz. Pangti, Sungro and Ashaa where they stay around for about 2 weeks. Traditionally, Nagas are known for hunting and there is significant traditional local hunting but mass killings of these raptors to the point of extirpation are new and recent. Mass migration of these raptors to Nagaland are said to have been taking place for over 50-60 years. In 2012, the Conservation India reported that about 12,000-14,000 were slaughtered - trapped and killed in just one location (Doyang roost site in Wokha, Nagaland) each year in just about a week. The reason for the emergence of large-scale slaughter of these raptors were pointed towards the Doyang Hydro project reservoir set up in 2002, where, according to the hunters, the reservoir attracted the raptors to stopover and roost in the area in huge numbers. It was speculated that large number of insects breed in the reservoir and a predictable source of food for these migrating falcons.

The sudden increase of the migrating falcon post 2002 triggered the large-scale slaughter. To the hunters in the area, it was an opportunity to earn by hunting them down and selling

which gradually created high demand - not just locally but across the region too. These hunters sold them at the rate of two birds at Rs. 64 earning from Rs. 20,000 to 40,000 in about 2 weeks. The hunting took place in Pangti village – the village is the major site for the roosting of the Amur falcons where it is estimated that there are about 50-60 hunters. These birds were seen as ‘manna from heaven’ or free food from heaven as the hunters became dependent on them for income. But this didn’t continue when a campaigning NGO- Conservation India alerted the Bombay Natural History Society (BNHS) and further assessed the massacre of the birds (Suresh, 2015). Online news, videos of the massacre circulated fast in the social media leading to a global outcry and drawing support to conserve the birds around the world.

Various organizations and bodies like Bombay Natural History Society (BNHS), Nagaland Wildlife and Biodiversity Conservation trust (NWBCT), Wildlife Trust of India (WTI) and Natural Nagas got involved in the conservation drive and awareness was brought about in the region. The falcons also found its place in the British Broadcasting Corporation (BBC) documentary. The church, which has a big say in Naga social life, also conducted special service on Sundays to spread the conservation message. Eco Clubs were formed in Pangti and Sungro, Ashaa and Doyang. Surveys for migrating birds were also conducted by NWBCT, Wildlife Institute of India (WII) recording their behavior and ecological pattern, on tracking the migration routes (Sushanta, 2014). The Indian Wildlife Protection Act, 1972 now protects the Amur falcon.

Along with the village passing a ban on killing the birds, funds were raised and robust conservation was put in place and actions were taken to ensure the conservation of the Falcons which came out successfully. BNHS initiated a community outreach programme and this was received well locally. The birds managed to pass through safely and continue their migration. The local government also issued anti- hunting order. Local outreach programmes were initiated and extended to the church, students and eco club programmes (Gardiner, 2015). In 2013, the state of Nagaland came to be known as the “Falcon capital of the world” and went on to win other awards like Balipara Foundation Award and Royal Bank of Scotland Conservation Award. The village was also popularly tagged by the media as ‘Hunters turned Conservationists’.

Image 1.2 :Amur Falcons trapped by a net



Source: Bano Haralu, 2012

Nagaland, distinctive in the system of property rights wherein the resources are largely owned by the community and also known for community participation also saw the community ownership of falcon conservation which significantly went up in the local community. However, not everyone was up for conservation. Although for many, they volunteered to conserve after being made aware of the conservation benefits, for some, they felt compelled to follow the regulation set by the village and were skeptical of the impact on their livelihoods. In the early stages of conservation, there were many resistances and some hunters were apprehended. There were fines and other penalties imposed for hunting the bird. But eventually, with the efforts of the community and external support, conservation was made possible.

The community-led Amur Falcon Roosting Areas Union (AFRAU) was also formed in 2014. This Union comprised of landowners of the roosting sites of the Falcons consisting of about 400 members. They set up check posts and carried out patrolling and thereon resulted in zero killing of the bird. They act as tourist guides and, and also keep guard at the roosting sites, maintain the watch towers, while some are employed by the Forest Department as Protection squads. Conservation Clubs were formed in 2014 in Pangti, Sungro, Doyang and Okotso villages. Classes on conservation are taken every week and

various competitions, workshops and awareness programmes are conducted by Bombay National History Society (BNHS) and sometimes along with Bird Life International, Malaysia. A community event takes place every year based on topics like extinction of birds, conservation and its impacts on the environment, etc. Planting tree saplings is also a part of their activity. Various other community activities to promote conservation were carried in different ways via education, tournaments, awareness programs etc. involving the schools, church and different groups.

Image 1.3: A poster of Amur Falcon conservation awareness



Source: Author's own, 2018

Image 1.4: View of a Roosting site



Source: Author's own, 2018

To compensate the landowners who were dependent on the agricultural lands (at the roosting sites) and the hunters who were dependent on the bird, few incentives were provided: poultry scheme was provided to targeted beneficiaries; employment of protection squads every season; employment on tourism related activities; construction of a guest house; watch towers, resting sheds constructed at the roosting sites.

1.4.3: Conservation of Amur Falcon and livelihood struggle

Conservation of the bird was a great success. The village eventually went on to win various awards for their contribution to the conservation of wildlife. However, apart from the many accolades and awards, the sad truth behind it is the villager's struggle for livelihood. The income from the bird hunting was considerably high and increased their standard of living too, for those who made profits out of the bird. Some of them were able to send children to private schools which were comparatively regarded as having a better qualitative education than the government schools. Small businesses boomed. However, with the ban, many parents had to shift their children to government schools where they were able to pay fees with meagre amount. There were other shifts too. Many hunters had to go through a shift in their livelihoods. The struggle to find a good source of alternative livelihood was

real and persistent because even though the Amur falcon income was only seasonal, for some, it was equal to an annual meagre earning. Lands are uncultivated in those roosting sites and the landowners had to give them up for conservation. With little or no incentives from the Government and NGOs, they now have to look for other sources of income. Currently, the disgruntled landowners are threatening that they will go back to the old ways of hunting if necessary incentives aren't provided. They have lost access to benefits but still have to bear the costs.

1.5: Study Area and Methodology

The study was conducted in Pangti village in Sanis tehsil under Wokha district in Nagaland, which is also known as the Land of Plenty. It is about 81.5 km away from Wokha town. It is surrounded by nearby villages- Okotso, Sungro, Lakhuti. The total population is 3337 with a total number of households of 696 according to the Anganwadi Household and population data, 2018. It is the largest village under the district.

Pangti village has been selected for the study because it has the highest roosting area of the Amur Falcon in Nagaland and the most impacted area from conservation. It recorded the highest number of kills of the bird and the highest to record revenue generation from it. It also consisted the highest number of hunters, consisting of more than 60 % of the population.

Map 1.2: Map of Pangti Village



Image 1.5: Pangti Village gate



Source: Author's own, 2018

Image 1.6: A view of the Village



Source: Author's own, 2018

The study is based on primary data collected from focus group discussions and household survey, which was carried out with interview schedule covering 84 households based on disproportionate stratified random sampling. The sample households are divided into landowners and non- landowners equally- 42 households each. The questionnaire contained a series of questions related to the people's livelihood assets and the heads of the households were interviewed. Two members of the village council, three members of the Amur Falcon Roosting Area Union (AFRAU) and an educator from the local Eco Club were also interviewed. The study was conducted in the month of October from 10th to 20th October. A translator and a local guide helped in communicating for the interviews conducted.

1.6: Research problem and Objective

The conservation of Amur Falcon in Nagaland was successful and still continues to be so but the impact conservation had on the livelihoods of the people in the village of Pangti where it was impacted the most, cannot be considered successful because of the struggle faced by the people to access secure livelihoods. The main objective of this study is to

analyse the impact on before and after conservation of Amur Falcon in Pangti village, Nagaland.

1.7: Significance of the study

There is a poor understanding of conservation in economics where the economic rationale involved often is ignored. However, understanding the economics behind a conservation is needed to understand the needs of the people in the process of biodiversity conservation, and can also help in management and policy making. The study of the conservation phenomena in Nagaland – the case of Amur Falcon – can help in this endeavour. It will also add to the existing knowledge of conservation and can lead to more effective, national conservation policies which can consequently lead to maximization of welfare less the conservation costs. The economic analysis to be made on the conservation programmes can be further used to promote conservation if the ongoing conservation programmes are efficient, beneficial and sustainable, maximizing the welfare of the people. However, if it is not so, further study can be made on analysing why conservation programmes that were put in place were not as efficient as it is supposed to be.

1.8: Chapter Outline

The thesis is organized into four chapters.

Chapter 1 is an introduction to the paper. It consists of the background of the study followed by methodology, research problem and significance of the study. Chapter 2 covers the literature review on varied themes. Literatures on hunting, livelihoods, community conservation, legislations and theoretical framework are reviewed. Chapter 3 discusses the results of the study undertaken and discusses the impact of conservation on the livelihoods of the village. Chapter 4 summarizes and concludes the paper with few policy recommendations and the way forward.

Chapter 2

Literature review

2.1: Introduction

This chapter reviews different literatures encompassing the importance of hunting to livelihoods. The following literature review is done to explore the different works already done on: varied issues on hunting and sustainable hunting; the importance of community conservation; conservation impact on livelihoods; incentive/ benefit approach to conservation and finally, legislations on hunting. They are reviewed to help understand why and how hunting plays an important role in people's livelihoods. This is followed by the impact conservation has on people's livelihoods and the effect of benefits given as compensations to conserve. The chapter lastly covers a section on legislations to understand different legislations that are regulated to conserve.

2.2: Hunting

The orthodox concept of hunting and gathering which was only confined to wild resources is now replaced with the concept of modern hunting and gathering. The modern hunter-gatherers pursue a variety of additional subsistence activities, a heterogeneous mode of subsistence. They combine and shift between various activities apart from hunting and gathering which may include cultivating lands occasionally, trading, or working in the offices, etc. (David, 1992).

The activity of hunting is an important component in many household economies both as a source of food and income and also serves as a primary source of protein. In areas like Congo Basin and sub-Saharan Africa, it is suggested from the evidences collected that bushmeat is the protein source from animals (Wilkie and Carpenter, 1999). In North Myanmar, farming generates the highest source of income and is considered to be the primary occupation. This is followed by non-timber forest product and then hunting. In rural areas, hunting is not a primary source of consumption, but it is a primary source of income (Rao et.al, 2010). Hunting is a major income-generating activity in the rural Equatorial Guinea even though Bar-shop trade is the most profitable activity. Hunting

activity is more often pursued by male population. Commercial hunting and fishing is dominated by male population while agriculture, which is mainly for subsistence is pursued by female (Kumpel et al., 2010).

In North Myanmar, the primary reason given for hunting is for trading purposes and that is followed by subsistence and human- wildlife conflict (Rao et.al, 2010). Loibooki et al. (2002), suggest that participation in hunting may be influenced by access to alternative sources of meat, means of generating income, ownership of livestock and farming land. And that, it is possible for poor families to engage in hunting because they have less means of generating income from agricultural. To them, hunting serves as a source to satiate both subsistence and livelihood needs. Those hunters hunting predominantly for income caught and sold a greater proportion of animals; in comparison, hunters predominantly hunting for subsistence caught fewer animals, hence, they either ate or gave the catch away (Kumpel et al., 2010).

In the rural Equatorial Guinea, hunting is considered to be temporary or as a “long term fall -back in times of financial need” and when it is difficult to get a job in the local area. The majority of the hunters chose to hunt because there is no other source of income for them. In comparison to higher- income and lower- income groups, the middle-income group were most likely to hunt for commercial reasons. The study done in the region also concluded that most men often don’t hunt if they are able to access alternative source of income. For the others, who have no other alternatives available, they pursue commercial hunting as a “fall- back livelihood”. There is clear preference for salaried income, this is because of the stability of monthly wages and a higher status. Bar- shop trade, considered to generate the highest profit was a lucrative livelihood, however it was mostly pursued by immigrants to the village and not the local people (Kumpel et al., 2010).

Wild meat is consumed for cultural purposes and taste reasons (Rao, 2010). It is also debated whether wild meat consumption, in urban areas, is a luxury or a necessity item. Studies have indicated it as a luxury good because of the consumers’ willingness to pay higher amount for bushmeat (Trefon, 1998). More recent studies have suggested that bushmeat is preferred due to cultural reasons and indicate consumers willing to pay price higher than the domestic meat considering it as a privilege of eating bushmeat. And that,

the majority of consumers probably consume it because it is an openly accessible resource and has few less expensive substitutes. However, bushmeat is also considered as a cultural heritage luxury item and is also cited that consumers' willingness to pay higher price to obtain it, especially by urban elites. The most important barrier to preventing over exploitation of wildlife is likely the important role that bushmeat plays in the local economies because consumers and producers may not be willing to change their behaviour and the government can incentivize very little to impose restrictions on exploiting wildlife. Consequently, This will further lower the welfare of the already poor communities. It is likely that the importance and cultural significance of bushmeat to local economies is the most important barrier to prevent over exploitation of wildlife (Wilkie and Carpenter, 1999).

Hunting may or may not be the primary source of food or income but it can be concluded that it is an activity which cannot be dispensed off as with little importance because of the impact it has on the household economies and trade. It is pursued mostly for commercial reasons and that implies hunting has its own place in the income- generating sector and more so in the rural poor areas. However, like any other activity, anything done excessively is detrimental so is excessive hunting. The over exploitation of wild animals will eventually lead to its extirpation for which there are already examples of it like the Dodo of Mauritius, the golden toad etc., and many are under the threatened species list. Hunting, in its own way is necessary and beneficial but the excess of it has led us to rethink about the harm it is causing the environment and the ecology with the economic benefits it generates in mind. With the increase in population and increasing demand, there is also increase in commercialization of wild meat eventually leading to unsustainable levels of hunting and further threatening the hunted species and their ecosystems, the livelihoods and food security of those communities dependent on wildlife. (DFID, 2002; Brown, 2003). In the developing nations, for the rural communities, it is an economic imperative and rarely a choice to use of wild-living natural resources (Abensperg-Traun, 2009).

2.3: Sustainable hunting

2.3.1: Concept of Sustainable hunting

For resources to be sustainable it is crucial that the rates of harvest do not exceed the rates of production. The concept of sustainable harvest as given by Spellerberg, et.al (1993), embodies two requirements and the violation of any of these two will lead to depletion of the harvested population. The first is to achieve the maximum production from the population for human use. The second requirement is to avoid the reduction of the wildlife populations to levels at which the species is vulnerable to local extinction or the ecosystem functioning is affected. Sustainable harvest, therefore, requires both the maintenance of the resources for the exploitation of human welfare and the conservation of the species being exploited and the biological community the species lives in. A harvest that is not ecologically sustainable cannot be economically sustainable or socially realistic and hunting can be considered sustainable in the long run only when the “harvest is both socioeconomically and biologically sustainable” (Robinson, 1994). Sustainable hunting as defined in Article 2 of the Convention on Biological Diversity (CBD) is: “the use of wild game species and their habitats in a way and at a rate that does not lead to the long-term decline of biodiversity or hinder its restoration. Such use maintains the potential of biodiversity to meet the needs and aspirations of present and future generations, as well as maintaining hunting itself as an accepted social, economic and cultural activity”. The European Charter on Hunting and Biodiversity (2007), regards this statement as that which can contribute to conservation positively and benefitting society.

2.3.2: The case for sustainable hunting

With people’s dependence on wildlife and their meat for various reasons, it is befitting to ask if hunting can be continued indefinitely with some strategies without extirpating the species or completely ban hunting.

Peterson (2003) argues that to protect wildlife is to stop hunting, while others researchers like Adams & McShane (1998), Ostrom et al. (1999), are not in favour to stop hunting and argue that prohibition of hunting will be expensive and institutionally difficult. There are also those that argue that reducing rural poverty and improving levels of income, health care and education can prevent the destructive patterns of resource use (Brandon & Wells,

1992). This can be done through promotion of wildlife products trade, a marketable commodity available to those community dependent on the natural resources (Davies, 2002; DFID, 2002). There is recognition by researchers like Bodmer et al. (1994) that wildlife harvests can be sustainable when the demand for wild meat is low and this is more likely when the human population density is low.

2.3.3: Improving sustainability of hunting

In tropical regions, hunting is problematic because of the hunting pressure greater than the production of animals which frequently cannot meet the hunting pressure making neither supply nor demand uniform. This is due to the heterogeneity of the areas consisting of different wildlife communities, dynamics and human pressure. Hunting is clearly not sustainable where demand is greater than supply. The probability of sustainable hunting is determined by the ecological conditions affecting the demand for and supply of wildlife resources. Supply of wildlife resources can be estimated by calculating the maximum sustainable offtake and demand for wildlife can be estimated by actual wildlife harvests (Robinson & Bennett, 2004).

Another possibility of hunting bushmeat sustainably is by removing or reducing the hunters' incentives to hunt, or creating disincentives. This can be done through catering to the socio- economic needs and demands of the consumer. Also, focusing on hunter behaviour and prey choice if they are dependent on it, as a resource, can reduce the impact of hunting on those species close to overexploitation, whilst contributing to livelihood and food security (Rowcliffe et al., 2003).

2.3.4: Sustainability with hunting

In contrast to Asia, Latin America and African countries where there is excessive hunting and over exploitation of wild animals, European countries are faced with over population of wild animals. One study done by Tsachalidis & Hadjisterkotis (2008) on Drama and Kavala, Northern Greece, found that wild boars' population has increased worldwide and in the 1990s have seen its population explosion and the hunter populations has decreased. The increase has led to agricultural damage, spread of diseases like foot and mouth disease, swine flu, etc. these reasons have become a major problem and hunting remains a major tool to manage and control the population.

In the European countries, hunting is traditionally known as a sport for the elites (fox hunting) while in Greece it is a traditional sport for the middle class who are mostly married and residing in the village and is not allowed to be sold. It only remained as a leisure activity and to subsidize the family 'table' with meat.

Urbanization has led to increase in people moving to cities and getting private jobs or government abandoning hard labour work. However, increased incomes and better living conditions have allowed them to travel more often and to their villages to hunt for leisure or for self- consumption. Urbanization also has led to rural decline decreasing the number of farmers and cultivation which has enabled the wild boars to enter the cultivated lands and destroy them. Therefore, the authors point out the need to increase the number of wild boar hunters for sustainable hunting and keep in control its population and at the same time protect the farmers from excessive plundering of wild boar and encourage hunting as a leisure activity, which will further encourage ecotourism and provide jobs to the people, helping them to stay in their villages.

2.4: Community Conservation

Child (1996) opined that resource degradation is also triggered by mismanagement of resource scarcity, besides population growth. Jansen & Child (1992), pointed that the improper functioning of economic mechanisms is the root cause of the widespread disappearance of wildlife, and to properly manage these mechanisms will be the cheapest way to conserve wildlife. An example of correcting the mechanisms gone wrong is the Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) in Zimbabwe. This programme is an attempt to improve the conservation and management of wild resources. The CAMPFIRE introduces community- based management. Exclusivity is the key to efficient allocation of resources and pricing, unlike open access where there is no exclusion of resources, and in the case of CAMPFIRE this exclusion is translated in the form of shifting power from the central government to local government and communities.

The inclusion of communities in conservation is as vital as the conservation itself. Many conservationists are of the opinion that conservation of wildlife and protected areas will be unmanageable without active community conservation efforts (Adams & McShane, 1992;

Hackel, 1999). According to Infield & Adams (1999), “community conservation is intended to be inclusive rather than exclusive of local communities”. Child (1996) suggested that community-based natural resource management with sound management principles incorporating “transparency, accountability and democracy” can potentially solve the inter-linked problems of poverty and conservation. Gibson and Marks (1995) concluded that the conventional conservation policies approach adopted in the Eastern and Southern African countries which were inclusive of hunting quotas and permits, restricted access to firearms, etc., did not prove to be adequate since they barred rural residents from accessing most of the wildlife resources and barely incentivized. Therefore, to counter this problem, an alternative approach is adopted, which includes the participation of local communities in the management and planning of natural resources aimed at promoting economic growth and aims to transform the “would- be poacher” into responsible individual with a sense of proprietorship over wildlife. The inclusion of communities proved indispensable for conservation. The new approach also sought to generate revenues from wildlife to benefit the local communities (Brandon and Wells, 1992). This can be made possible by providing economic opportunities like employment and development projects and this is done to ensure the participation of local communities in deriving benefits from the utilization and/or the presence of wildlife (Kiss, 1990).

However, this did not prove to be successful too and added more layers of bureaucracy along with increased enforcement furthering the alienation of the local communities from active participation. The attempt of these programmes to change the behaviour of the rural communities to conserve wildlife through provision of goods mimicking public goods and also the dismissal of the significance that hunting has on local communities are some reasons for the failures of the implemented programmes. An important finding is that by incentivizing communities through quasi-public goods, there is absence of individual reward, and also such public goods only create a problem of free riding in which individuals continue to hunt while receiving the benefits of community-level projects. It is concluded that “conservation will be more successful at the local level when rural residents possess significant legal claims over wildlife resources and its management” (Baker, 1997).

2.5: Livelihoods

2.5.1: Bird Hunting and Livelihoods

Bird hunting, once considered as the primary source of subsistence, has now become a source of income, luxury food and a seasonal delicacy (Eason et al., 2015). Given that hunting is one important source of livelihood in many rural areas, bird hunting and its impact on livelihood cannot be considered as trivial. The dependence of people for their livelihood on birds can be overwhelming. This springs up the need to assess socio-economic dimensions of bird hunting which can help understand the relationships between hunters and birds as resources users and a natural resource (Kelleher, 1999). This, in turn can help perceive better the dependency on natural resources and also make it possible in assessing their coping ability when there are policy changes. Consequently, this can help policy makers to plan out and implement policies and strategies considering the potential impacts of conservation (Elhalawani, 2015).

In Egypt, hunting of migratory birds has significant impact on the people's livelihoods because apart from it being a source of income, it provides employment opportunities and to earn extra income. A study conducted in the Mediterranean coast of Egypt showed that there is a significantly high percentage of hunters from poor and marginalized communities depending on migratory bird hunting for income. More than 75% of the population practice hunting to add-on their income. A market for migratory birds to export to Arab Gulf countries significantly increased the export prices, in turn increasing bird hunting activities.

The report from the survey conducted exhibited the important role of bird hunting in the coastal community livelihoods as it was recorded that 60% of the respondents reported half of the source of income comes from bird hunting. The data collected also showed significant correlation between bird hunting and size of household, occupation and income. The assessment made on their social resilience, referring to "individual resilience and the flexibility with which resource-users can adapt to changes in resource-use policy" (Marshall & Marshall, 2007; Marshall et. al, 2010), exhibited unwillingness to adapt to alternative sources of income or protein by the majority of the respondents. They were confident on not giving up hunting and were not open to accept alternatives.

In Egypt, the contribution of bird hunting to the national economy is considered to be little. But studies that were conducted showed similar results of hunting serving as an important source of income and profit in the livelihoods for some rural communities. The main reason behind bird hunting in Egypt is stated to be profit motive. The socio-economic characteristics of the bird hunters showed that their dependence on the resources is significantly high, which suggests that major policy changes in favour of conservation can cause considerable impacts to communities (Elhalawani, 2015).

2.5.2: Impact of Conservation on livelihoods

According to Shoo and Songorwa (2013), nature conservation is likely to promote eco-tourism and this in turn provides a means through which local people can gain economic benefits and improve livelihoods. This will also reduce pressure on the physical environments as they abandon unsustainable practices of resource use. Tourism, as a tool to generate benefits in communities is however, argued by Tisdell (1999) that only few locals find jobs in tourism related employments because of the lack of skills and education of the locals, and the high salaried jobs usually management positions are usually given to elite immigrants or outsiders.

Assan and Beyene (2013) carried out an analysis on the impact of the ‘Tree Gudifecha’ ecological conservation project on the rural livelihoods in villages in Ethiopia. The findings show that the project improved the households’ livelihoods through household saving and income. The average income of households increased after the project and this increase came from diversified livelihood activities that were pursued with the onset of the project and households that participated in tree plantation were incentivized. The finding also concluded that skill enhancement interventions along with the availability of sufficient credit scheme and a comprehensive livelihood package can contribute to increasing community participation of household income and, that the incorporation of livelihood security programmes both at policy levels and development practice are needed to address environmental and ecological degradation. And, there is a general consensus on the importance of investment in projects to conserve and rehabilitate the natural environments, in order to ensure a healthy environment.

Bennett and Dearden (2014) concluded from the interviews conducted on the impact of National Marine Parks(NMP) in Thailand that fishing and harvesting livelihoods are generally seen to be impacted negatively. It was perceived that employment in these parks give out little benefit due to lack of access and development in livelihood capitals consisting of financial, physical, social, human, political, natural assets. Also, the incentives that the parks provided were too little for participation, support and conservation of the local people. They pointed out that although actual impacts are not the same as perceived impacts, they can still be explanatory.

According to Thoms (2008), logically, conservation of resources should lead to development and increased opportunities of diversified livelihood, which also means conservation success should lead to livelihood improvement of those resource dependent. In the case of a community forestry, theoretically, they can significantly establish new varied livelihood opportunities for those dependent on it but distribution of benefit mediated by institutions may have negative impacts. Practically, community forest organizations and institutional arrangements can both impact positively or negatively. In terms of livelihood community forest may actually cause problems in the rural poor. The reasons owing to local elite domination who are educated and usually the decision makers-making decisions that are self- benefitting and often placing restriction on resources that harm the poor who are dependent on the resources. There are also structural biases within the Department of Forests- they tend to consult the elites and reinforce the power relations, and culpability by the bilateral donors may be reinforcing traditions of the forest bureaucracy and not its reorientation. There is also possibility of elite domination and exclusion of marginalized groups impacting positively to the environment but it is also essential to remember that limitations placed on resource extraction rather than active management has improved most community forests. In other words, there may be potential for even greater forest quality in terms of improved forest product availability.

2.6: Community conservation and Benefit/Incentives based approaches

The economic rationale behind a community conservation programmes is the approach to conservation with benefit/ incentive programmes. To be willing to conserve is to benefit from wildlife. Some authors have argued that these approaches are essential if the benefits

or incentives provided in the programmes can adequately cater to the local needs and offer sustainable alternative sources of livelihoods that are congruent with the existing structure of the community (Fiallo and Jacobson, 1995; Kapoor, 2001).

However, Emerton (1999) argues that benefit-based models do not completely understand the economic rationale of the nature of wildlife benefits and community conservation because in the long run, these models may neither contribute to wildlife conservation nor lead to community welfare improvement. Also, she argues that while benefit distribution is necessary, it is “not a sufficient condition for communities to engage in conservation”. That is because, the models are dependent on the following: i) the economic costs incurred by wildlife, ii) the form of reception of benefits from varied external factors and wildlife and, iii) the costs and benefits of economic activities, these factors lead to limiting the extend of procuring wildlife benefits by the communities as real livelihood gains.

Infield and Namara (2001) analysed the impact of a Community Conservation Programme (CCP) implemented in a national park over a period of seven years in Uganda. They concluded that communities which benefitted from the programme have a more positive attitude towards conservation than communities that did not. That is because, these programmes enforce conservation policies and management on the rural poor, costing their economic opportunities, farms and live stocks lost to wildlife and, resource exclusion (Ghimire & Pimbert, 1997). So, communities that receive benefits to cover the costs are more likely to respond positively towards conservation programmes.

Spiteri and Nepal (2006) argued that the existing incentive based approaches to conservation, due to the complex heterogeneity composition of community, requires a comprehensive conceptualization of a “community” so as not to limit its definition, excluding members of the affected population which consequently leads to unequal distribution of benefits. The benefits from the existing incentive based approaches are not distributed efficiently to households within communities according to the varied degrees of affect caused to them by threats from wildlife that are protected, and restrictions to use the resources. Brown (2002), also has a similar opinion on incentive based approaches. He says puts forth that the application of these approaches can prove to be ineffective because of the inaccurate definition of “community”.

The flawed classifications of “community” based on the inaccurate assumptions of homogeneity in economic, social, and political values, resulting in narrow consideration for beneficiaries of development programs (Agrawal and Gibson, 1999; Leach & Scoones, 1999; Brown, 2002) since rural communities are comprised of individuals representing different beliefs, ideals and values (Alcorn, 1993; Archabald and Naughton-Treves 2001; Kapoor 2001; Salafsky et.al, 2001). The skepticism of the locals to accept Incentive based approaches is due to distrust between local communities and conservation agencies and this causes the difficulty to generate uniform community support, barring the contribution of incentive based approaches or programmes to conservation. Ostrom (1990), argued that unequal benefit distribution will make conservation goals difficult to be attained because it will lead to the “tragedy of the commons”.

Spiteri and Nepal (2006) also agreed that present incentive based conservation approaches lack consideration for issues on equal distribution of benefits from the incentive based programmes and suggests the need to enhance community knowledge about conservation, have more participants in conservation efforts by communities that are marginalized and accurately have the targeted beneficiaries identified. Brown (1997) has argued that equity consideration of “both within and between generation,” forms an essential principle in the achievement of sustainable development. In the design and implementation of Incentive based programmes, there is need for equity considerations so that they can adequately cater the local needs while offering alternative sources of livelihoods (Gbadegesin and Ayileka 2000; Fiallo and Jacobson 1995; Kapoor 2001). An important step to generate uniform community support through the incentive based programmes is to actively involve the marginalized residents and letting them be a part of the planning and decision making powers by removing the existing structural barriers. This active involvement can encourage communities to work towards conservation goals incorporating traditional ecological knowledge in management and decision making (Brown, 2002; Rao, et.al 2003). When local people themselves initiate and support the integration of conservation and development, it is more likely that the projects initiated will be successful. (Hutton and Leader-Williams, 2003) and with the adoption of a long- term perspective. In order to ensure that incentive based programmes contribution to conservation and development are

maximized, compensation needs to be greater than the cost of conservation and that can be done by addressing equity issues (Spiteri and Nepal, 2006).

Bennett and Dearden (2014) put forth that fairness or equity of those programmes could be increased through different means of benefit sharing like capacity building programs supporting local economic and tourism development, and hiring practices. They suggested that increase of access to assets and development of alternative livelihood activities should be specifically considered, which may also mean collaboration of NGOs and the government.

Although there is progression in the inclusion of local people to management and planning of the incentive based programmes, the end- users are still deficient of active participation and partnerships (Heinen & Mehta, 1999; Kellert et.al, 2000). Sekhar (2003) argues that consequently, these disadvantaged groups may dismiss imposed restrictions because of limited returns from these programs, leading to failure of achieving conservation plans and goals. Another failure of incentivizing community for conservation effort can result from business opportunities provided by these programs which are usually taken up by developers or businessmen from other areas (Newmark & Hough, 2000). Spiteri and Nepal (2006), argues that the lack of local capital has led to investment of infrastructures or services of those tourist destinations by wealthy developers from other countries or regions. This can be a threat to local tourism opportunities that can potentially bring benefits because of possible monopolization of benefits that can be derived by the investors outside.

The current literatures on management of conservation in developing countries suggests the essentiality of active participation of community along with provision of benefits to them in order to reduce conflict (Fiallo and Jacobson, 1995). However, even with the implementation of benefit based programmes, there are still conflicts persisting particularly because of inadequate consideration of the local residents and the benefits of community (Kellert et.al, 2000). The programs implemented are not designed to address the leakage of benefits to external_elites or immigrants. In order that the local communities retain benefits generated from conservation and is maximized, it is essential to incorporate residency requirements and compensation programs. Also, the effects of conservation of external stakeholders need to be considered and possibly be provided with compensations because

they can impact the state of the environment. Thus, benefit dispersion needs to be addressed to generate maximum revenue at the local level (Brown, 2002).

2.7: Legislations on hunting

The need for sustainable hunting has ushered in the need for legislations on hunting. While hunting itself is not harmful to the species and the ecosystem related to it, excessive hunting is detrimental. Therefore, proper management and regulations on hunting can play an important role in the maintenance of a species' population within the carrying capacity.

2.7.1: Analysis of legislations across the globe

Analysis of different legislations across different countries shows that legislations differ with space and time and also vary across countries according to the resource abundance or scarcity, like the legislations of hunting in the European Union countries which differ among themselves and have their own specific traditions, conditions, the number and species diversity of game animals. However, they are to comply with the adopted EU directives, like the Birds Directive (1979), Habitat Directive (1992), Firearms Directive (1991) and Wild Game Meat Directive (1992), which are considered to be the main basic legislative acts that influence policy- hunting.

The EU creates a unified system for collecting hunting bag statistics (ARTEMIS), which is primarily an information portal, to effectively control the dynamics of bird populations, which can make information on game animals regarding the sources of statistical data from different countries accessible. The European Commission supports sustainable hunting, and encourages the maintenance of habitats with economic incentives, to increase populations of certain species of wild animals and birds, encouraging the use of financial resources (Myronenko, 2015).

All the EU countries have legislation laid out in the Birds and Habitats Directives on nature and wildlife conservation for the protection of birds and animals and their habitats along with hunting laws for all game species. They encourage hunting for recreational activities, food and sport done sustainably and are committed to sustainable use of natural resources and animals, and ensures that hunting is sustainable through their regulatory framework. There is regional and national combination of regulation. There are also hunting

organisations that play a role in the administration too and legal provisions made generating collective responsibility for game management and conservation. Some countries like Poland, Sweden and Germany also encourage hunters to be conservationists as they can be considered useful human resource, giving their time, knowledge and can contribute to monitoring purposes. Strict regulation along with close integration of hunters and nature conservationists can offer a range of probable benefits including protection, management and monitoring of the species and its habitat (Pillai, A. & Turner, A. 2017).

Similar to the EU countries, the Mediterranean Third countries of North Africa and Middle East also have hunting laws. Some have specific laws while some are part of some other laws like Agriculture and Environmental laws. In India, the Wildlife Protection Act, 1972 (which had further amendments) tries to effectively protect the wildlife by putting restrictions on hunting. There are licenses and permits issued for special purposes and specific areas but full translation of international legislation obligations supporting conservation of migratory birds into national hunting legislations and implementing them is still not realized. Also, there is weak enforcement of legislations and persistent widespread unregulated or illegal hunting. Most of the countries have their own hunting regulations and laws covering a wide and varied range of hunting management issues. They include: ministries responsible for hunting regulation and administration; fees and licenses or permits; bag limits; designation of hunting grounds and locations; permitted hunting seasons; restricted hunting methods; penalties for illegal hunting etc. However, even where national legislation exists, in many cases, it is not adequate or not adequately enforced to fulfil the requirements and obligations of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) (European Commission, 2006).

2.7.2: Measures regulating game bird hunting

Game hunting for food or sport is practiced widely and this requires proper regulations. One measure to regulate game bird hunting is licensing the hunters, which gives individual permission to hunt. This provides information on the level of pressure on hunted species in the country each year and reveals the number of legal hunters. All countries impose license fee and they earn a considerable revenue from it in areas where there are many hunters. Hunters also need to go through practical and theoretical tests to get a hunting license which

is perceived as a useful way ensure that both the society and game populations are benefitted and support responsible hunters. There is linkage between conservation and sustainable hunting of game bird species because conservationists and hunters, in many cases, share a common aim, to restore and maintain huntable species at favorable conservation status (Pillai, A. & Turner, A. 2017).

2.7.3: Legislations in India

In the Indian Penal Code 1860, Sections 428 and 429 under Chapter XIV which cover protection of animals. However, the need to protect wildlife in India was largely realized only after the post- independence period. Initially, wildlife was ignored and most conservation policies were only subsets of the National Forest policy. In 1952, the Indian Wildlife Board centralized all the rules and regulations pertinent to wildlife conservation in India. In 1956, they passed a decree that accorded all existing Game Parks the status of a Sanctuary or a National Park. After which, Wildlife Protection Act was passed in 1972 under Article 252. This Act prohibited poaching of certain animals, for which there are licenses made as a prerequisite for hunting, except for research and scientific purposes.

In the Act, there is also provision for declaration of any area to be a national park or sanctuary by the state government, as long as the area is considered having adequate and significant fauna, flora, and ecology for the protection or developing wildlife or its environment. In 1973, Project Tiger was enacted, the largest wildlife conservation project of its time. The 42nd Constitution Amendment Act, 1976, inserted in the Directive Principles of State Policy and Fundamental Duties, specific provisions for environmental protection. Article 48A (Directive Principles) enunciates that “the state shall endeavour to protect and improve the environment and to safeguard the forests and wild life of the country”. Article 51A(g) (Fundamental Duties): “To protect and improve the natural environment including forests, lakes, rivers, wildlife and to have compassion for living creatures” is included. Two entries 17A – Forests and 17B – Protection to wild animals and birds were added in the Concurrent List (Sankar, 2016).

During 1971–1990, there were initiations to protect crocodiles and tigers, conserve natural resources, biodiversity and protected areas. The Wildlife Protection Act (WPA) of 1972 was amended in 1991, banning completely on hunting and trade of wildlife. This was

followed by amendment in 2003, legalizing awarding penalties for wildlife crimes and also conservation and community reserves were newly initiated through this amendment to support the participation of individuals and in conservation. The National Wildlife Action Plan (2002–16) was also initiated to encourage people's participation in wildlife conservation (Niraj et al., 2012).

2.7.4: On Migratory Birds

Assessments were made by literatures published on migratory birds visiting India which recorded about 370 species of birds that migrate to India, out of which 175 species undertake long distance migration using the Central Asian Flyway area, which also include Amur falcons, Storks, Flamingos, Egyptian vultures, Ibises, Plovers, Ducks, Jacanas, etc.

The Ministry of Environment, Forest and Climate Change in 2016 provided the following important steps taken by the Government for protection of migratory birds: The Wild Life (Protection) Act, 1972 provides under Schedule-I, the highest degree of protection to rare and endangered species of birds which include migratory birds and violators of the Act are punishable. It also recognizes important habitats of birds as protected areas, including those of migratory birds. State/UT Governments are provided with technical and financial assistance to protect and manage Protected Areas. The Government of Nagaland, Forest Department, NGO's, scientific institutes along with the local communities have taken measures to provide protection to the migrating Amur Falcons which stops over in North East India on their journey to Southern Africa.

The Wildlife Crime Control Bureau, to control illegal trade in wildlife has also been established. India is a signatory to the Convention on Migratory Species (CMS) and India has got the approval to join Raptor Memorandum of Understanding(MOU) with CMS. India continues to be actively involved with the Convention on Biological Diversity (CBD) and Convention on International Trade and Endangered Species (CITES) to maintain international conservation. Although there are Acts and other regulations, researchers consider the Indian policies as bureaucracy driven and are skeptical of the way the wildlife policies are addressed. There are suggestions that law enforcement personnel need very specialized training and that the training of all natural resource professionals needs improvement and professional development (Thapar, 2003; Narain et al., 2005).

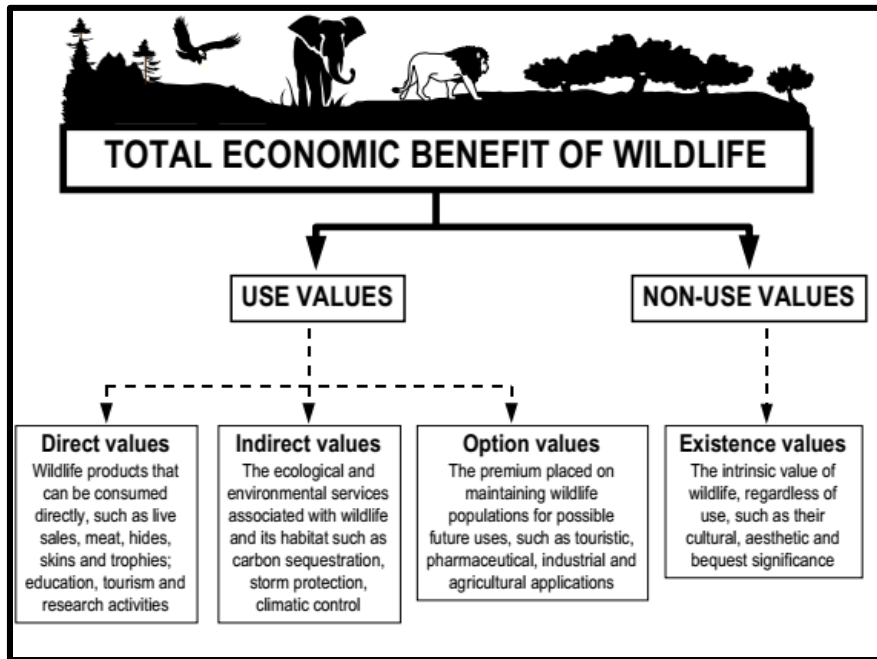
2.7.5: Legislation and implementation gaps

With varied legislations also come varied implementation and its gaps. Not every legislation made is implemented on time or never at all. Lack of: clarity and integration; implementing regulations, decrees, laws; consultation with stakeholders; awareness; corruption; adequate national legislation to implement objectives and obligations of international conventions; scientific basis are some of the many legislation gaps that are barriers to successful implementation of legislations effectively and to achieve sustainable hunting (European Commission,2006).

2.8: Economic Benefits and Costs of Wildlife

The economics of community conservation and a precondition for community-based conservation begins with the recognition that wildlife yields economic goods and services and the ability to generate revenues. Wildlife possesses a high economic value and there is need to maintain it and hence provides a major justification for wildlife conservation. The total economic benefit of wildlife given in Figure 1.1 is a summation of direct, indirect, option (under use values) and existence values (under non- use values). The direct value includes products that can be consumed directly. The indirect values include the environmental and ecological services associated with wildlife and its habitat. The option values include the premium placed on maintaining wildlife populations for possible future uses. The existence values include intrinsic value of wildlife.

Figure 2.1: Total Economic Benefit of Wildlife



Source: Emerton, 1999

The total economic benefit of wildlife is the sum of all these values:

$$TEBw = Vd + Vi + Vo + Ve$$

Where: Vd = direct values

Vi = indirect values

Vo = option values

Ve = existence values

$TEBw$ = total economic benefit of wildlife

2.8.1: The economic rationale for community conservation

Wildlife generating national benefits is the crux of community conservation. Besides that, domestic economic gain is very vital to channel in sufficient local incentives. Hence, they

make up the economics of conservation. Figure 1. 2 illustrates the Benefit-based economic model of community wildlife conservation. In the model, the economic rationale of community conservation is illustrated and wildlife is considered as having a high economic value, but little of this value is received by the local communities who are economically marginalized and they are not incentivized enough to conserve wildlife. The Benefit- based approaches require generating national, government and community benefits:

$$TEBw = Bn + Yg + Bc$$

Where:

Bn = national economic benefits

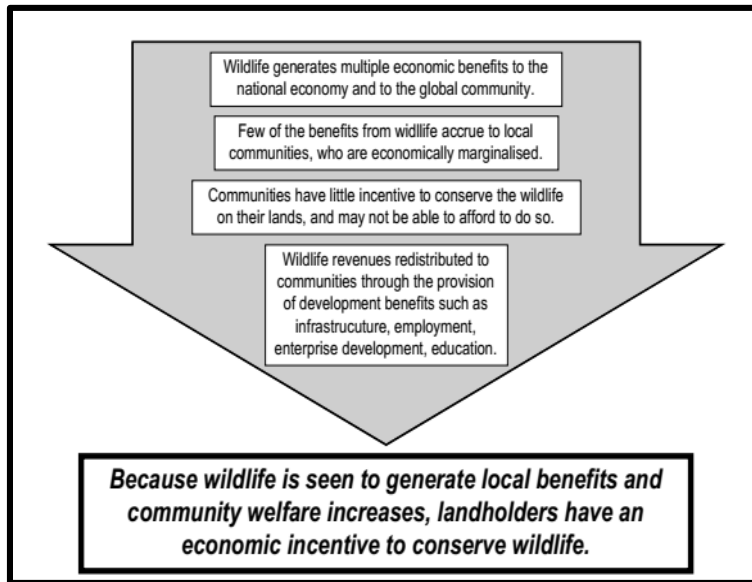
Yg = revenues for government

Bc = benefits for community

However, the benefits of wildlife require a redistribution because the current distributions are often skewed towards people who live outside wildlife-rich countries or outside wildlife areas and often the benefits are skewed away from local communities who are often mostly economically marginalized and do not have access to secure livelihoods. Unequal distribution of benefits can actually discourage the local communities to conserve wildlife because they do not gain any economic benefits and there is no reason to conserve. There is no chance of wildlife survival unless it contributes sustainably to the local community because it may sometimes become an economic necessity to exploit and destroy wildlife and makes more economic sense than to conserve.

Benefit-based approaches do not fully address the economic issues involved in community wildlife conservation. The provision of development benefits like infrastructure, employment enterprise development, education etc. can potentially improve public attitudes to wildlife and community welfare in the short- run, but not in the long run. Therefore, the incorporation of the livelihood systems, the costs of wildlife and policy factors into economic approaches can help understand the forces behind wildlife loss at the local level.

Figure 2.2: Benefit- based economic model of community wildlife conservation



Source: Emerton, 1999

The generally poor physical and socio-economic conditions of the local people living in the wildlife areas with no secure access to income and livelihoods, generally engage in a range of depletive wildlife activities for subsistence of livelihoods. Benefit- based approaches to wildlife conservation provide a wide range of development benefits to ensure secure access to livelihoods. But, these benefits do not fulfil the purposes and rarely secure income or livelihoods and also rarely meet the local peoples' daily needs and thus may not generate sufficient and efficient incentives needed for community conservation, causing them to continue engaging in harmful unsustainable wildlife activities:

$$B_c \neq Y_h + C_h + L_h + e_h$$

Where:

B_c = community benefit- sharing provision

Y_h = income of the household

C_h = consumption of the household

L_h = employment of the household

Eh = other household livelihood benefits

Even in the case of community benefit sharing, there may not be enough benefit generated to sufficiently compensate the people such that they can be in a certain economic position to be able to forego exploitative activities on wildlife. The opportunity cost of people's time in wildlife areas is high and they may be unable to afford the high transaction or compliance costs of participating in community conservation and may be unable to cope with the loss of income and subsistence generated by wildlife damaging activities. Transaction costs accruing over the time allocated by community members to participating in community conservation activities include:

$$Cct = Yf + Ff + Af + Df + ef$$

Where:

Cct = the transaction cost of participating in community conservation activities

Yf = income-generating activities foregone

Ff = food-generating activities foregone

Af = agricultural activities foregone

Df = domestic activities foregone

ef = other productive activities foregone

Hence, the implication here is that a simple set of community development project or development benefits as benefit sharing will unlikely lead to any significant improvement over an individual or household economic welfare because there will be varied livelihood needs and it will unlikely show significant improvements.

2.8.2: Community wildlife costs

Wildlife becomes a positive economic asset when wildlife revenues are converted into community development benefits but it is not absolute. Instead, in relation to the costs incurred by wildlife, they can only be used as an incentive for conservation. Hence, the total economic cost of wildlife (TECw) is the sum of the following values:

$$TEC_w = C_d + C_a + C_o$$

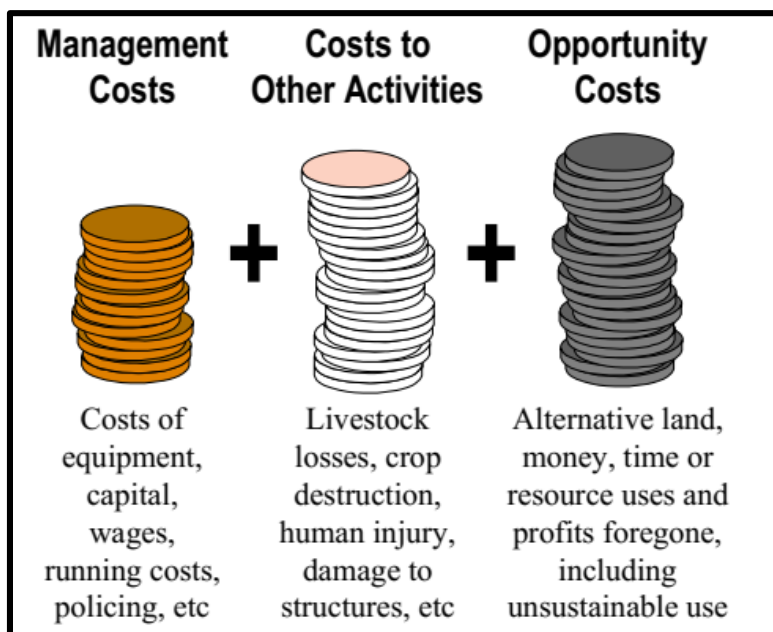
Where:

C_d = management or direct costs

C_a = costs to other economic activities

C_o = opportunity costs

Figure 2.3: Total economic costs of wildlife



Source: Emerton, 1999

Direct costs include the equipment, maintenance, capital associated with wildlife management. The costs to other economic activities include, crop destruction, livestock losses, human injury, etc. The opportunity costs of wildlife are the land, money, time, resource use and profits foregone from these activities which diminished by allocating resources to wildlife conservation. For conservation to be economically viable, the wildlife benefits must cover or be greater than the direct costs. Similar to unequal distribution of benefits, wildlife costs also tend to accrue unequally. Economically marginalized

communities are those least able to bear the conservation costs but often they bear the most burden from the damages caused and economic opportunities foregone due to wildlife.

Benefits that are provided must not only be sufficient to equilibrate the value of wildlife costs but also compensate for the economic opportunities foregone due to wildlife. Therefore, for local communities to be economically willing and able to conserve wildlife, the following condition must be fulfilled:

$$TEB_{wc} > C_{cd} + C_{ca} + C_{co}$$

Where:

TEB_{wc} = total economic benefit of wildlife for communities

C_{cd} = wildlife direct costs to communities

C_{ca} = wildlife costs to other community economic activities

C_{co} = wildlife opportunity costs to communities

Also such benefits should accrue to communities in the form of real financial or livelihood benefits which offset the financial and livelihood costs caused by wildlife:

$$TEFB_{wc} \geq TEFC_{wc}$$

Where:

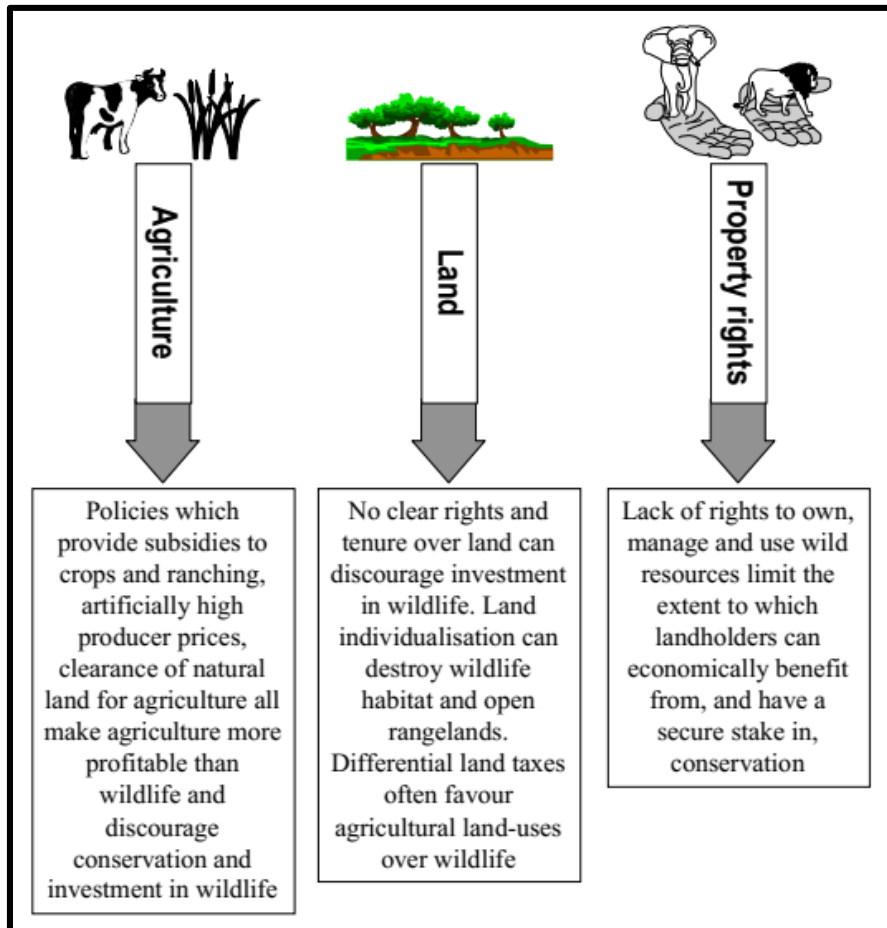
$TEFB_{wc}$ = the financial or livelihood form in which wildlife benefits accrue to communities

$TEFC_{wc}$ = the financial or livelihood form in which wildlife costs accrue to communities

2.8.3: Policy influences on community wildlife costs and benefits

Another pitfall of Benefit- based approaches is that they ignore the existence of economic disincentives to community wildlife conservation. Recognizing perverse incentives which encourage destruction of wildlife and overcoming them is important in the economics of community conservation.

Figure 2.4: Major economic disincentives to community wildlife conservation



Source: Emerton, 1999

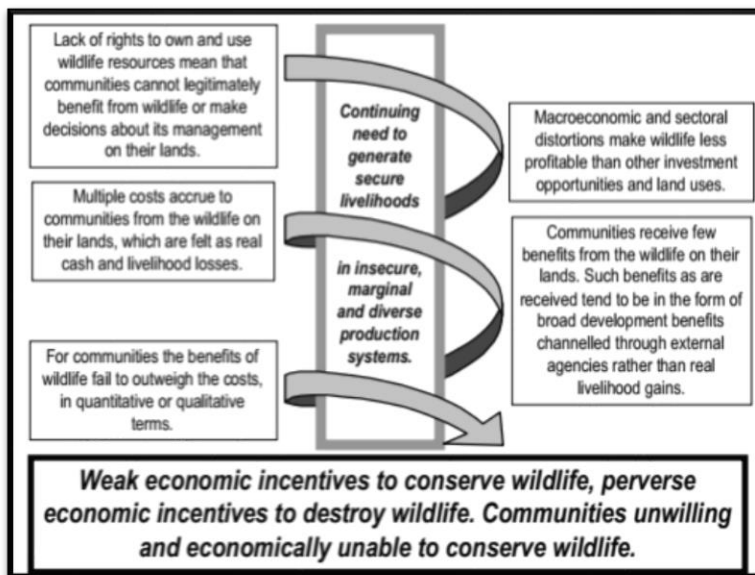
The wildlife areas are dominant with livestock or arable agriculture. The macroeconomic policies tend to be biased towards agriculture and hence discourage conservation of wildlife because it generates lesser income in terms of finance. The amount of land required for wildlife is extensive and these lands are demarcated and used for agriculture, threatening wildlife. The limitations set by policy factors on property rights in natural resources can constrain the benefits that can be derived from the wildlife on their lands.

2.8.4: Multi- Causal model

There are alternative approaches introduced to incorporate the economic considerations and go beyond the one-dimension benefit based models. These alternative approaches recognize the need to directly involve community in conservation and also take in wildlife

benefits as a means of livelihood support for local communities. These approaches are based on the multi-causal economic model given in Figure 1.3. It recognizes the need to overcome the many economic forces leading to wildlife loss at the community level and to see conservation within the context of providing secure livelihoods to the communities living in wildlife areas.

Figure 2.5: Multi- Causal economic model of community wildlife conservation



Source: Emerton, 1999

2.9: Research gap

Although there are different literatures covering the importance of conservation on livelihoods, not much study has been done on the conservation impact on livelihoods, especially, wildlife conservation impact on livelihoods. And, there is limited study done on the impact of birds' conservation on livelihoods. No study has been done on the impact of conservation in livelihoods (particularly Amur Falcon). The main objective is to study the impact of conservation on the community livelihood and compare 'before conservation' and 'after conservation'.

2.10: Conclusions

Different literatures that were reviewed agreed that hunting, albeit, may not be a primary source of income, nevertheless, plays an important role in rural people's livelihoods apart from the important role it has as a source of protein. Hunting, in the long run, is detrimental but, researchers also agree on the possibilities of hunting sustainably. Sustainability requires conservation and the literatures agree that community is important to bring out a successful conservation plan. But, it was argued that without benefits /incentives given in exchange for conservation, will be a Herculean task. Benefits/ incentives are necessary but not a sufficient condition. In the literatures, it has been argued that although theoretically, conservation should positively impact the community, practically, it isn't always so. This conclusion has been drawn from a result that showed negative impact on the livelihood assets because of conservation. But, some other literatures showed positive impacts too. The review done on different legislations across the globe can be concluded that although there are varied important legislations passed, there is still gap in their implementations. The last section reviewed is on the different costs of wildlife and the cost of conservation incurred by a community. It introduced a new approach which is inclusive of benefit based approaches but going beyond it to generate secure livelihoods in an insecure, marginal, and diverse production systems.

Chapter 3

Impact of conservation on livelihoods

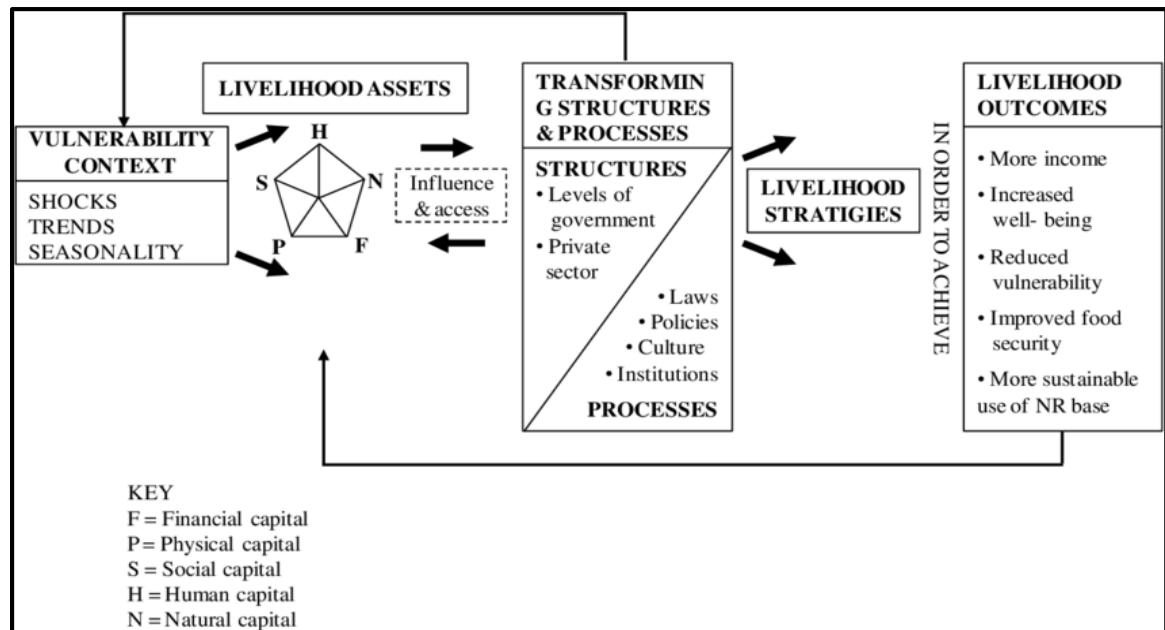
3.1: Introduction

For a successful conservation programme, community participation is a pre-requisite. But the costs of conservation can be quite high and unsurmountable especially in rural communities that are already economically marginalized. While it is not always so, policies in favour of conservation may sometimes make a community worse- off than before, costing their time, resources, assets and other livelihood opportunities. This chapter covers the impact on the livelihoods of Pangti village before and after conservation, i.e. Prior to the conservation initiation, before 2012 and after 2012. The study examines the impact through comparisons of the livelihood assets based on the Sustainable Livelihood Framework and discusses the results obtained.

3.2: The Sustainable Livelihood Framework

Sustainable livelihood framework is used as a theoretical framework for assessing the impact of conservation on the livelihoods. An adaptation of Department for International Development (DFID) version of Chambers and Conway's definition of Sustainable livelihood is "A livelihood comprises the capabilities, assets and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base" (DFID, 2000).

Figure 3.1: Sustainable Livelihood Framework



Source: Carney et.al., 1999

The vulnerability context refers to the external environment in which people exist. There are three factors that influence the people's livelihoods. Shocks consisting of illness or death can deprive a family of an income source and that may force them to sell or give up important assets. This factor may also consist of conflict, weather etc. Trends include national or international economic trends, political systems and technology change. There can also be seasonal shifts of prices, production cycles, etc. All of these factors influence the access to livelihood assets and can be positive sometimes.

The livelihood assets or capitals refer to the capitals that are needed to achieve possible livelihood outcomes. They consist of the following: Financial capital consisting of access to financial services and inflow of money; Physical capital consisting of basic infrastructure, tools and equipment; Social capital consisting of social resources; Human capital consisting of skills, knowledge, good health, etc.; and Natural capital consisting of the natural resource stocks. These livelihood assets influence the 'transforming structures and processes' referring to the institutions and policies ranging from household to international and private to public spheres. They influence decision making processes and the vulnerability context and access to assets. The livelihood

strategies comprise of the range of activities that people undertake to achieve livelihood goals. They are dependent on the assets, and institutions and policies. Livelihood outcomes refer to the outputs of livelihood strategies.

The Sustainable Livelihood approach is flexible and is adaptable to local contexts. It can be used as tool in order to prioritize development activities and provides a clear view on ways to reduce poverty and has paved a possible way to integrate the four pillars of development- social, economic, environmental and institutional. However, the downside to the approach is that it needs financing, time and also human resources and often development projects that are undertaken lack them. Also, improving the livelihoods of a specific group may also mean impacting negatively on livelihoods of others. This can lead to unsure priorities (Glopp, 2008).

3.3: Results

The following sections cover the results obtained from the primary data collected. The data consists of different livelihood assets which are responsible for livelihood strategies and outcomes. To analyse the impact of conservation on livelihoods, the varied livelihood capitals are compared in accordance to before and after conservation.

3.3.1: Financial Capital

Financial Capital refers to the financial resources and other economic assets, including basic infrastructure and production equipment and technologies essential for the pursuit of any livelihood strategy (Scoones, 1998).

There is no market in the village to serve as an economic livelihood opportunity. However, there are few small shops available where they sell few basic kitchen necessities. The small shops have increased from 8 to 12 after conservation. And during the migration season when tourists flock in, some temporary shops are opened. For small tradeable items, they sell it among themselves and some of the agricultural products are sold to nearby villages and towns. The nearest market place is Mokokchung which has a distance of 81Km but Wokha is preferred because of the language barrier with the other town. The distance is about 38 Km.

Before conservation, the highest source of income is from fishery with a mean of ₹6900 which makes of 39% of the total sources of income followed by hunting with a mean of ₹4200 which makes 24% of the total sources of income. They earn an average annual income of ₹60000. After conservation, the highest source of income comes from fishery but has reduced to an average of ₹58000 because of increase of fishermen, unaffordable fishing equipment and lesser fish. This is followed by own land cultivation. The average annual income also has reduced to ₹25000.

Table 3.1: Sources of Income

Particulars	Mean Household Income		Mean Per Capita Income	
	Before	After	Before	After
Farming	25695 (14%)	36753 (23%)	4931 (14%)	7054 (13%)
Poultry	14428 (8%)	15400 (10%)	2769 (8%)	2955 (49%)
Fishery	69185 (39%)	58642 (38%)	13279 (39%)	11255 (12%)
Firewood	6700 (4%)	13666 (9%)	1285 (4%)	2623 (2%)
Forest	1425(1%)	2671 (2%)	273 (1%)	512 (2%)
Household Industry	2000 (1%)	2250 (1%)	383 (1%)	431 (2%)
Interest	15666 (9%)	26250 (17%)	3007 (9%)	5038 (22%)
Hunting	42136 (24%)	0	8087 (24%)	0
Total	60268 (100%)	25155 (100%)	11567 (100%)	4828 (100%)

Source: Primary Survey, 2018

From the data, we can conclude that there is poor financial capital that further decreased after conservation. Before conservation, fishing was the highest source of income followed by hunting but after the conservation, income from hunting reduced to zero and the mean income also dwindled greatly. With the conservation, the landowners of the roosting sites had to give up cultivating on their lands. The average acre of land that they gave up is about 3 acres of land. These landowners had to give up their lands mainly because of two reasons. Firstly, the birds do not stay and roost even with the slightest disturbance. Secondly, the excreta from the birds in the roosting area made it difficult for the vegetation to grow. The roosting area is filled with rubber, teak, banana, and other plantations, and these are laid untouched for the sake of the birds, for which some had to give up their plantation lands unwillingly. There was nothing much done to compensate the landowners or the hunters whose livelihood depended on the lands and the birds. The Government provided a poultry scheme to help them start a livelihood business but that reached only few households and it wasn't enough or sustaining to those who received it. 92 % of the sampled households responded that they were not benefitted from any of the incentives that were being provided because it was given only to the targeted beneficiaries. However, only few from the targeted beneficiaries were able to access it. It was unequally shared and not efficient. The Forest Department gave funds to construct waiting sheds, watchtowers and more watchtowers which did not do anything to boost the village economy or aid the stakeholders.

Image 3.1: A watchtower at the Roosting site



Source: Kevin Loughlin

To compensate the landowners, some of them were employed during the migration season as tourist guides, protection squads, translators, boatmen, etc., and they are paid about ₹500 per day. However, the opportunities offered aren't sustainable. The first problem is that there are not enough people employed or employable, second, revenue earned by those few who were able to get hold of the scheme and other opportunities weren't enough to sustain a household because they are only seasonal employments and not enough to last a household necessity throughout the year without pursuing other livelihood options. Albeit, there are opportunities for some households to open their homes as homestays to tourists and other visitors, they do not have sufficient opportunities because most of the tourists or other visitors preferred to stay in Wokha town or go to hotels after their activity- bird watching or visiting the roosting site, etc. except for a few who decided to stay because they wanted to or needed to stay for a longer period. There are camping sites near the

roosting areas but there are no proper sanitation facilities and access to basic facilities is difficult.

Those families who were dependent on the bird were the most affected ones. Having no other proper means of alternative source of income, they had to shift their children to government schools which are usually known for lower quality of education. Many had to borrow money to maintain their improved standard of living that came with the hunting of the bird. In the process of interviewing the people. For some, they had to sell their poultry and pigs to pay for fees or maintain the kitchen needs which were initially reared for their own consumption. Even though Amur Falcon hunting was a seasonal income, for some, it was equivalent to their annual earning so ban on hunting caused their income to drop adversely. Business was affected too as the sales in the small shops were better before conservation as compared to after conservation.

Although the conservation programme was a benefit- based approach, the results from the data collected showed that the benefits did not outweigh the costs of conservation. The villagers had to pay with their natural resources, i.e., the bird and the land, for conservation. Like other current benefit -based approaches reviewed in the previous chapter, the little benefits that they received were unequally distributed, which is one of the important reasons given for failure of conservation programmes.

3.3.2: Human Capital

Human Capital is another important asset to achieve a sustainable livelihood. It comprises of the skills, knowledge, good health, ability to labour, experience and physical capability (Scoones, 1999). A rich Human capital gives more leverage to achieve other forms of capitals more efficiently.

There are two existing primary health centres- Sub centre ‘B’ Khel and Sub centre ‘C’ Khel. However, there is often lack of medical supplies because of the poor accessibility to pharmacies and hospitals, a cause of poor road condition which is pervasive. With the conservation wave, the basic facilities seemed to have improved a little because of the attention from the government and visitations to the health centres have increased, but accessing to supplies from outlets is still difficult because of the unchanging poor road

condition. The most common health issue existing is blood pressure. The nearest hospital is in Mokokchung however with the same reason of language they prefer to go to Wokha which is of 17 Km.

There are four government schools in total. The Government Primary School Sector A, B, C which offers till class 5 and the government Middle school offers till class 8. For higher education, they have to go to the other villages; Okotso, 1.6 Km and Sungro 5.7 Km or to other towns. The distance to the nearest school is approximately 60 meters which is of walkable distance. The 2011 census has recorded the village as having a literacy rate of 77.13% of which 83.40 % are male and 71.02% are female. However, in the sampled households, the percentage of education in women is more than men in all the categories except in secondary section.

Table 3.2: Educational Status

Educational Status	Male	Female	Total
Illiterate	12.74	15.77	14.29
Literate (Non formal)	0	0	0
Below Primary	1.89	5.41	3.69
Primary	5.66	7.21	6.45
Middle	33.49	36.04	34.79
Secondary	29.25	18.47	34.79
Graduation and above	16.91	17.12	23.73
Total	100.00	100.00	100.00

Source: Primary Survey, 2018

3.3.3: Natural capital

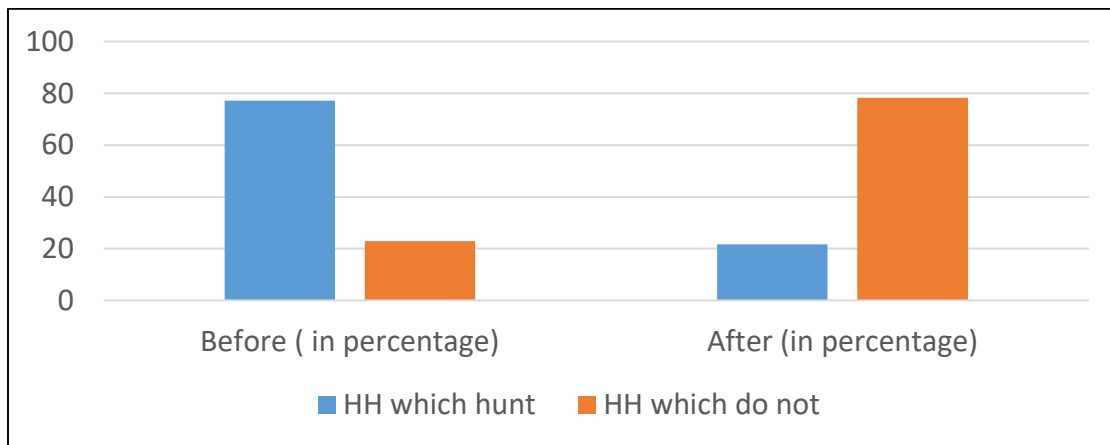
Natural capital includes the natural resource stocks and environmental services from which resource services and flows useful for livelihoods are derived. A rich natural capital when harnessed efficiently and sustainably can add a lot of revenue to an economy.

The village is naturally very rich. 92.77 % of the households collect NTFP for their own consumption like wild berries, wild green leafy vegetables some medicinal herbs and organic soils. About 7.23 % collect them to sell. There is no change in this trend with before and after conservation. The annual average earning from NTFPs sold amount to ₹1400 before conservation. After conservation it has increased to ₹2600.

About 77.11 % of the household take part in hunting both for leisure and income frequently before conservation. The Amur Falcons come in millions and it was possible to trap around 400 to 500 of them each day and sell it. Many hunters earn about ₹50000 to ₹70000 annually per season, an income equivalent to their annual returns from other sources. An average of ₹42000 is earned per hunter annually. By the beginning of 2016, the village council issued hunting regulations where hunting is open to only some seasons apart from Amur Falcon which is completely banned. The seasonal hunting is open in August and February and closed in March and July. Defaulters are fined with ₹10000. After conservation, it has decreased to 21.69% of households. Although there are no Amur Falcons hunted anymore, some of them still hunt other wild animals like wild boars, squirrels, etc.

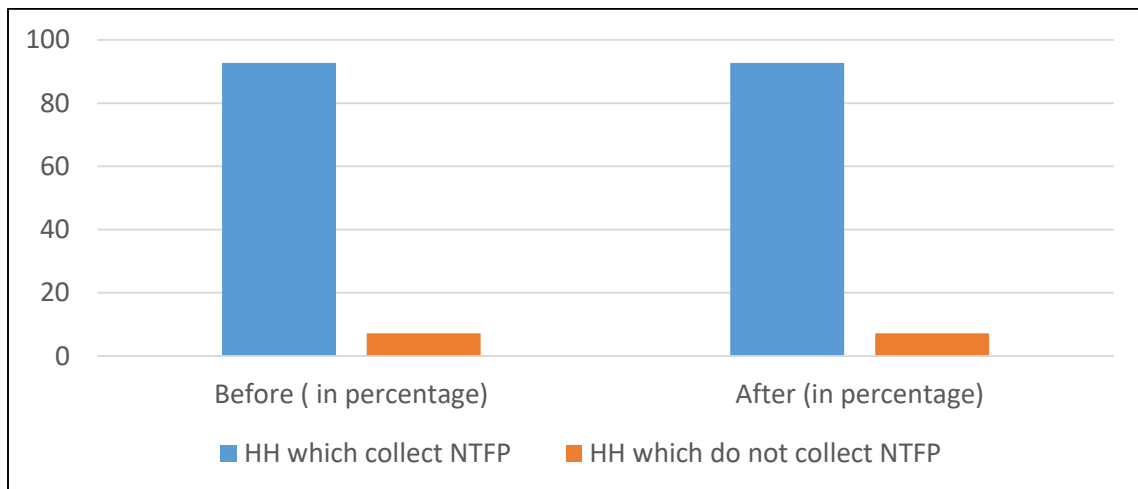
Figure 3.2: Access to Natural Capital

a) Wild animals



Source: Primary Survey, 2018

b) Non-Timber Forest Products



Source: Primary Survey, 2018

Table 3.3: Status of frequent usage

Forest Produce	Before (in percentage)	After (in percentage)
Sometimes	85.54	87.95
Often	7.23	4.82
No	7.23	7.23

Source: Primary Survey, 2018

Water is sufficient in the village although the source of water is brought in from Longkhum Village, Mokokchung. There are tanks and sub- tanks constructed in all the khels and pipes are connected to the houses. There is hardly any water scarcity throughout the year.

90.4% of the households have their own lands and cultivate for their own consumption. However, the percentage has reduced to 84. 52% after conservation. One main reason for the decrease is there are more people who have opted to go to the towns to earn a living rather than cultivate their lands which don't generate much income.

The State Government's purchased land for conservation and management of forest is very less in spite of the purchase of about 6.9312 Sq. Km. forest land from private owners by the Department of Forests, Ecology, Environment and Wild life under the aegis of the Government of Nagaland to take up plantation and Biodiversity Conservation which accounts for only about 0.43% of the total geographical area of the district Wokha. In Pangti, lands are mostly owned by the clan/ family/ individual, the rest is owned by the village and a negligible percentage of government land. According to land survey report 2005-06, 90% of the villagers follow jhum cultivation and the total jhum area is 665 hectares. The jhum area available per household is 0.7 hectare. Apart from jhumming, there are plantation lands of rubber, teak, banana etc. Plantation lands at the Amur Falcon roosting sites are left uncultivated and unharvested after the conservation to let the birds roost undisturbed. From the interview, it came to be known that they had given up the lands for conservation in exchange for development in the village. But, these landowners were not incentivized sufficiently or efficiently, nor any significant development brought in. The

lands given up are their most fertile ones and there is easy access to irrigation. It is likely that they will start cultivating again if their demands aren't met.

3.3.4: Physical Capital

Physical capital comprises of the physical assets, the basic infrastructure, tools, equipment, etc. that are needed to support livelihoods. The following components of infrastructure are essential for sustainable livelihoods: Housing and safe buildings; access to information; access to road and transport; access to sanitation and water; and clean and affordable energy.

All the sampled households have a house of their own. The livestock they have are mostly for their own consumption although few households rear them for sale. They are mostly poultry and pigs. There are very few households which owns other physical assets like TV, fridge etc. The data shows almost the same trend on before and after conservation except for livestock which showed a decreased trend after conservation. Apart from household assets, there are no agricultural assets. They do not have tractors or other mechanical agricultural assets. For ploughing and other purposes, they still use man and ox labour and they usually do not pay wages for the work done, instead, they offer help voluntarily.

Accessibility to road and transport is quite poor. The road to Pangti is of unpaved road. There are no buses available although there are taxis and there are not much private vehicles. The hilly and the bad road condition has made it impossible for small cars to travel. With the poor road condition, the taxis or the vehicles running break down and had to undergo repairs quite often.

Table 3.4: Physical Assets

Particulars	Before (in percentage)	After (in percentage)
House	100.00	100.00
Livestock	82.14	76.19
TV	57.14	53.57
Vehicle	22.62	23.81
Fridge	3.57	3.57
Others	3.57	3.57

Source: Primary Survey, 2018

In terms of community facilities. There is good power supply, community hall, a playground, five churches and about five burial grounds. However, there are no police station or post office. The nearest ones are in the next village, Sungro. The Wildlife Trust of India (WTI) in aid of conservation programme constructed a guest house in 2017. Although the building has been constructed there are no further funds to maintain it so it is kept empty with no further development and unused.

Image 3.2: Guest house constructed by Wildlife Trust of India



Source: www.wti.org.in

It was expected that the conservation campaign will bring in development in the village so as to usher in tourism opportunities now that the village is known for conservation success. But, from the interviews conducted and the data collected, it showed that there is no proper development initiated or done either in the village or in the roosting area. There are no basic facilities like toilets, first aids, shelters, good roads, drinking facilities, food, etc. provided for tourists. Although there are about two thousands of tourists both local and international streaming in each year, nothing much has been done to imbibe tourist attractions by the government. However, there are some private homestays constructed in 2017-18 near the roosting area and nearby the Doyang reservoir. There are also camping sites where there are tents pitched and small houses built with wooden planks and straws, which are some of the tourist attractions. There are also boats to ride for tourists in the area. Despite the people's pleas for basic facilities and motor boats at the roosting sites, there are no news from the Government yet.

Image 3.3: Camping Site at a roosting area



Source: Author's own, 2018

Image 3.4: Small huts at the roosting site



Source: Author's own, 2018

Image 3.5: Recently constructed Home stays at the bank of the Doyang river



Source: Author's own, 2018

From the interview with the Amur Falcon Roosting Area Union (AFRAU), they commented that around the season of the birds' migration, they repair the roads as best as they could, collecting funds among themselves and setting up posters to welcome the tourists during the season, each year but with no aid from the Government. They had to resort to cultivating more lands to make up for the loss.

Most of the villagers own lands and cultivate in their own, while some lease their lands and are paid back in tins of rice after the harvest. Many lands are family lands where they share the harvest from the same cultivating land. The percentage of households cultivating their own lands have decreased after the conservation. One reason is that people have opted to migrate to towns for better employment opportunities.

Table 3.5: Land use

	Before (in percentage)	After (in percentage)
HH Cultivating own lands	90.48	84. 52
Rented out	4.76	4.76
Rented in	1.19	1.19
Sharecropped	7.14	3.57

Source: Primary Survey, 2018

The highest percentage of land holdings are the small farmers. There is decrease in the percentage of landholdings after conservation except for large landholding which has increased. About 44 households from the sample are landowners in the roosting area. An average of 3 acres from each household are given up for conservation, while some had to give up about 5 acres, which are all filled with rubber, banana, teak plantations.

Table 3.6: Land holdings

Cultivation	Before (in percentage)	After (in percentage)
Landless	9.6	15.48
Landholders	90.4	84.52
Marginal(0.1-2.5 acres)	3.57	2.38
Small (2.5- 5 acres)	79.77	67.86
Large (>5 acres)	13.10	26.19

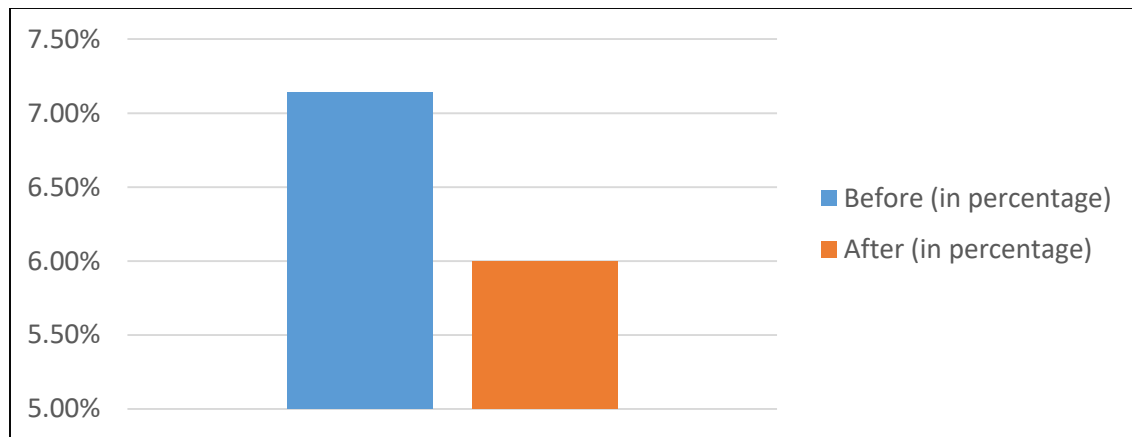
Source: Primary Survey, 2018

3.3.5: Social Capital

Social Capital comprises of the social resources such as social networks, associations, affiliations upon which people draw when pursuing other livelihood strategies requiring coordinated actions (Scoones, 1999).

There are 10 existing SHGs comprising of about 20-30 members of women. These SHGs lend money to the villagers, where the rate of lending has increased. From the interview conducted, many of the respondents commented that borrowing also increased and thievery increased alongside too. Apart from the SHGs, there are also private lenders. The data below shows that the percentage of private lenders have decreased after the Conservation.

Figure 3.3: Lending Household percentage



Source: Primary Survey, 2018

There is involvement and awareness of the existing of Anganwadi by all the sampled households. There are also various involvements of the youth in cultural and youth groups comprising of about 150 members in each groups. Presently, there are two youth groups and two cultural groups. The Amur Falcon Roosting Union(AFRAU) formed in 2014, is a landowners' union which takes care of the birds for their safe passage during the migration season. They have a total member of about 300 households. They maintain the roads, set up posters, provide tourist guides, translators, homestays and so on for the tourists and other visitors from outside the village.

There is also a Conservation club called Eninum Eco Club (*Eni*: endearing or call upon, *Num*: stay together in flock) formed in the village initiated by the Nagaland Wildlife and Biodiversity Conservation Trust (NWBCT), which was established in February 2014 and consists of about 15-20 members, providing a 3 years' certification course. There are similar Conservation clubs formed in the nearby villages- Sungro, Okotso, and Doyang. Their activities in a year include planting of plants and tree samplings in and around the village. There are classes on bio- diversity conservation every week where books are provided free of cost by the Nagaland Wildlife and Biodiversity Conservation Trust (NWBCT) and various competitions are held occasionally which also includes community events organized by the educator of the Club and funded by the Bombay National History Society (BNHS). Every year BNHS and sometimes along with Bird Life International Malaysia conducts workshops and awareness programmes which lasts for 2-3 days and sometimes extending up to a week. The workshops and programmes having a positive impact on the villagers have entertained the practice of seasonal hunting and has also resulted to banning of guns for hunting during off season. Also, ban on the use pesticides have been forwarded to the Village Council.

The landowners of the roosting site have their own union called as Amur Falcon Roosting Area Union (AFRAU). However, there is poor social relationship with the AFRAU and the village council. There are ongoing conflicts in regard to funds channeled in for the conservation programme, which has severed their relationships, which is also a reason for the difficulty of getting willing and honest respondents because the people are intimidated by what the other party would say or do if they respond truthfully or against them.

3.4: Conclusion

Based on the Sustainable livelihood framework, the impact on livelihoods in Pangti was analysed with comparisons made on livelihood assets. As discussed in the framework, access to livelihood assets influence the vulnerability context and the transforming structures and processes and eventually affecting the livelihood strategies and outcome. Secure access to livelihood assets is an important influence to achieve positive livelihood outcomes.

From the data collected, there is no sign of significant positive increase of numbers in any of the capitals. Most of the assets showed a negative trend. The Financial capital showed a declined average income after conservation. There is still difficult access to medical facilities and education, in terms of Human Capital. Accessing Natural Capital hasn't declined but the earning generated did not show a positive trend. Ownership of Physical Assets is quite low. And, Social Capital is also poor, taking into account the ongoing conflict. Hence, it can be concluded that there is no positive impact of conservation on livelihood concluding from the comparisons made from the livelihood assets. None of the livelihood capitals have an increased trend after the conservation.

Beside the trends, there is no secure access or ownership to livelihood assets. People have to constantly look for uncertain multiple jobs to substitute their earlier source of income. There were no significant incentives or benefits given to the landowners and the hunters. And whatever was given weren't equally distributed which only resulted to conflict.

Chapter 4

Conclusion

4.1: Introduction

In Nagaland, most of the wildlife conservation are communities- based conservation and serves good examples of it like the community protected forests in Phek district and Khonoma Nature Conservation and Tragopan Sanctuary, home to some of India's last populations of the grey peacock pheasant, and of Mrs. Hume's pheasant, Blyth's Tragopan, grey sibia, clouded leopard, slow loris and Hoolock gibbon, among many other species. They are all successful conservation instances but the community conservations and initiatives have to face a number of challenges like lack of external support or recognition for their efforts and even within the regions, also local communities have limited capacities to handle threats or conduct studies on ecology and the society (Pathak, 2009). The need to conserve has taken its place finally with conservation awareness and benefits increasingly embraced by people. The conservation effort that took shape in Pangti was an immensely huge and impressive community effort. The successful conservation of Amur Falcon with a record of not a single kill raised the bar of community conservation not just in Nagaland but in other regions too, raising the hope that conservation is possible even in a region where hunting was predominant. However, this conservation cost the livelihoods of the local people drawing skeptical and critical perspectives from those who suffered loss in the form of restriction of access to resources and those who were not sufficiently incentivized.

4.2: Objective

To study the impact of conservation on the livelihoods in Pangti village. It is analysed by comparing the livelihood assets before and after conservation.

4.3: Results

The conservation programme is considered as a community effort, however, about 30% of the sampled households responded that they only complied to the law of the village and it wasn't voluntary. Nevertheless, community effort played a pivotal role that brought

conservation success in Pangti despite the many loopholes and overlooked areas of livelihoods. This effort is an example that conservation is possible. But, for a sustainable conservation, it requires much more than just conserving the resources, it necessitates efforts to introduce alternative livelihoods and basic necessities too, failing which, there is bound to be consistent objections from the local people or the stakeholders. In the case of Pangti, it cannot be considered as a sustainable conservation because of the failure to substitute an earlier source of income with alternative sustainable sources of livelihoods and, this failure has made conservation harder to be embraced by the local people because it took away a good source of livelihood- although not sustainable, it was an easy source- and did not replace with anything that could somehow substitute it. This has left the people to doubt over conservation policies and may cause a hurdle even in the future conservation policies. The villagers are left disgruntled and this can be reflected in the responses of the respondents where 78% of the respondents said that the conservation project wasn't a success taking into account the socio and economic factors and preferred the earlier livelihoods before conservation. The requests and pleas for better basic facilities were not met by the Government and nothing much was done to compensate those landowners who gave up their lands for conservation. This has led to perception of conservation as something 'abominable' by the people.

Benefit approaches to conservation, though not sufficient is necessary for a rural area and in this case, Pangti. As argued by different literatures (covered in literature review) that, without ensuring benefits to be given in exchange to conserve, people are unlikely to conserve. And the same goes with the villagers of Pangti. They were told that conservation will bring benefits (apart from conservation awareness and ecological importance). However, the benefits expected didn't take shape and this resulted in a chaotic situation, for instance, the conflict that came about after conservation. In the case of conservation in Pangti, the landowners and the hunters in Pangti do not have complete landownership rights over their own lands or the birds because the Government has declared the area a bird reserve area. They are not able to cultivate in these lands or harvest whatever has been planted. They are unable to benefit from the birds or their lands and do not have any managerial rights over them. Hence, they bore multiple costs in terms of cash and

livelihood losses. The benefits of wildlife fail to outweigh the costs because there are no incentives given which can serve as livelihood gains.

What could be a good potential tourist hotspot and making ecotourism a source of livelihood did not or haven't yet lived to its goal yet. A community that is dependent on the natural resources for its livelihood cannot and is not ready to trade off its source of livelihood for a conservation cause without sustainable alternative means of livelihood. Not everyone was dependent on the bird for income but there was definitely a lot of them who turned to hunting and gave up farming and fishing. There are people who now hardly makes end meet after the ban because the income from it was such that it covered the expenses of the children's fees and supported the family all throughout the year. One of the families I interviewed lamented that after the ban on hunting the bird, four of the children had to discontinue because there wasn't enough money to support them. And that is just one family among the many. There are numerous pleas and media attention for help-to provide basic facilities and other incentives. But so far, nothing has been done except give a prestigious tag on the village and applaud them as 'hunter turned conservationists'. If this persists, it would come as no surprise if these 'hunter turned conservationists' go back to their old means of livelihood, even if it means extirpating the whole species to feed their families.

On a recent happening, there was a festival in commemoration of the Amur Falcon- to promote eco -tourism and conservation but there is so much more needed to be done than its promotion. The need of the hour is bringing in a sustainable alternative source of livelihood and providing basic necessities to the village. There is need for alternative sources of livelihoods to introduce conservation programmes to have both livelihoods and conservation sustainable altogether.

4.4: Policy recommendations

The questionnaire included questions of preference for development projects or activities in the roosting site, which is a little away from the village, or the village itself. The responses recorded 90% of the respondents preferring it in the roosting areas. This is so because of the perceived hope that development in the roosting areas will eventually develop the village too. Therefore, with this perception, the roosting site can primarily be

provided with basic facilities. Also, from the interviews conducted, 98 % of the respondents preferred community development rather than providing incentives to selected/ targeted beneficiaries. The reason because selected beneficiaries do not equally distribute the incentives. Benefits and incentives that may be received in the future must be distributed equally and efficiently. This will avoid potential conflicts and misunderstandings among the villagers. Future incentives can be distributed equally without targeted beneficiaries.

The most common complaint that was shared by the respondents was the pathetic road condition. This pervasive condition is also one of the causes of the limited tourists travelling to the village and very slow business.

Providing basic facilities rather than money incentives can be potentially a better policy because the distribution of cash is usually not efficiently distributed or equally to every stake holder, as learnt from the past, which resulted in conflicts.

Trainings can be given for basic skills as tour guides and translators to give a better experience to the tourists and more efficiently. There is also dire need to set up proper resort and proper establishments of sightseeing infrastructures. Guest houses and home stays establishments can be a good source of revenue if there are essential facilities provided and promoted.

Educating the local people about the conserving benefits can play an equally important role. Awareness of benefits can do away misunderstanding and confusion about the intentions and purposes of conservation, eventually making implementation of conservation programmes easier and more efficient.

The village currently doesn't have any other tourist attraction apart from the seasonal Amur Falcon migration so there is lesser chance of getting a good amount of revenue from tourists. Therefore, introducing alternative tourist attractions accessible in other seasons can be good source of income too.

Above all, checking the progress and following them up is necessary in all conservation programmes.

4.5: Limitations

The study could cover only 84 households although 100 households were targeted initially. The reason is due to the ongoing conflict that is going on between the landowner's union and the village council, for which it was difficult to get willing respondents. Some of the responses may be inaccurate or biased because of the conflict and some other personal reasons.

4.6: Way Forward

The research was centered only in the impact of conservation on livelihood. Further study can be made on how to cope with the change in shifts in the livelihoods. Further study can also be made on the policies effecting the livelihoods and suggest sustainable alternative approaches for policy makers.

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Appendix

Section 1: General information

- a) Name of the village:
- b) Tehsil:
- c) District:
- d) Total population of the village: Male: Female:
- e) Total number of households:
- f) Total number of literate population: Male: Female:

Section 2: Information on civic amenities

2.1 Education

- a) No. of schools:
- b) Level of education available:
- c) Distance to the nearest School:
- d) Condition of the school: Good/ Satisfactory/ Bad
- e) Access to School: Easy/ Manageable/ Difficult

2.2 Health

- a) Existence of Primary Health Centre?
- b) Status of health facilities:

	Before Conservation	After Conservation
Access to Medical Facilities: 1. Easy 2. Difficult		

Visit to the Primary Health Centre: 1. Never 2. Sometimes 3. Always		
Sickness due to nutritional deficiencies: 1. Often 2. Sometimes 3. Very often		
Health complaints:		
Any other:		

2.3 Marketing

- 1) Nearest Market place:
- 2) Access to market: Easy/ Manageable/ Difficult

2.4 Community facilities

- a) Transport
- b) Electricity
- c) Community Centre
- d) Playground
- e) Religious places
- f) Burial ground
- g) Pasture land
- h) Forest

- i) Post office
- j) Police station
- k) Drinking Water
- l) Any other (specify)

Section 3: Skills and Trainings

	Before	After
Skills or trainings given by the Government (Specify)		
Any employment opportunities given by the Government		

Section 4: Social Capital

1. What are the regulations on hunting? Who makes the decisions?
2. Is hunting still prevalent (other than Amur Falcon)?
3. Is there any form of Illegal hunting?
4. How have hunting/ conservation regulations affected the livelihood?

Section 5: Incentives from the Government and NGOs

- a) What are the incentives given by the Government/NGOs?
- b) Are they still continuing or progressing?
- c) Are they sustainable?
- d) What are the positive and the negative impacts?
- e) Are the incentive programmes giving out part time/ full time jobs?
- f) Is it sustainable without pursuing other sources of livelihood?
- g) What are the current levels of direct and indirect contributions of the incentives given to local livelihoods, food security and nutritional health of the people?
- h) Is accessing the basic facilities easier now? Why/ Why not?

- i) Who are the people benefitting from the conservation project?
- j) Who are the stakeholders of the project?
- k) What about those who are not benefitting from them? What is their source of livelihood?
- l) What are the things that the people have to forego to usher in the conservation project?
- m) How are the activities of conservation influencing the livelihood?
- n) Is there shift in the livelihood activities?

Section 6: Interview for the Conservation Club

- a) When was it started?
- b) How many members enrolled initially?
- c) What is the present number of members actively involved?
- d) What are the activities that they do throughout a year?
- e) Are there any workshops/ seminars/ awareness programmes initiated?
- f) Where do they source in funds to conduct programmes?
- g) How often do they meet?
- h) How are the people benefitting from it?
- i) Has the Club progressed over the years or is it the same?

Household Questionnaire

Serial number:

Details of household members:

Sl. No.	Name	Relation with HH	Sex	Age	Marital Status	Education Qualificatio	Main Occupation	Subsidiary Occupation	Annual Income (₹)
1									
2									
3									
4									
5									

Sources of income:

Source of Income	Before Conservation/ Ban on hunting	After Conservation/ Ban on hunting	Reasons for change
From own land cultivation			
From leased in land			
From leased out land			
By hiring Agri. Assets (Bulls)			
Poultry			
Fishery			
Collection & sale of fire wood			

Collection & sale of other minor forest produces			
Household industry			
Trading / Business			
Profession (specify)			
Service (Govt.)			
Service (Pvt.)			
Non-farm wages			
Income from rent of other properties / assets			
Income from interest / dividends etc.			
Income from hunting			
TOTAL			

Physical Capital

Assets

Particulars	No.		Value		Income Derived	
	Before	After	Before	After	Before	After
House						
Livestock						
TV						
Vehicle						
Tractor						
Others						

Land use

	Land Use (Acres)	
	Before	After
Own land cultivated		
Own land kept fallow		
Own land rented out		
Land rented in		
Land sharecropped		
Land given up for Conservation		

Natural Capital

	Before	After
How often do you hunt? 1. Once in a week 2. Twice in a month 3. Others (specify)		
Which animals do you hunt? 1. Wild boars 2. Deer 3. Others (Specify)		
What are the Non- timber forest products that you use? 1. Wild green leafy vegetables 2. Medicinal berries 3. Wood ash fertilizer 4. Others (specify)		

How often do you use them in a year?		
1. Frequently		
2. Sometimes		
3. Never		

Water

Items	Sources of water			
	Surface		Ground	
	Before	After	Before	After
Drinking				
Cooking				
Bathing				
Cleaning				
Livestock				
Irrigation				

Agriculture

Name of the crop	Cultivation practices		Reasons for change
	Before Conservation	After Conservation	

Additional Questions

- i. Which is a more sustainable source of income- Hunting or Conservation?
- ii. What is your preference?
- iii. Is accessing to basic facilities easier during hunting or after conservation project?
- iv. Did you voluntarily conserve or just complied to the law because of penalties?
- v. Do you prefer the kind of source of livelihood before or after conservation projects?
- vi. Is conserving the bird worth trading off your source of income?
- vii. Do you think the Conservation project was a success taking into account the socio and economic factors?
- viii. What are the benefits personally acquired after the Conservation?



सत्यमेव जयते

राष्ट्रीय ग्रामीण विकास एवं पंचायती राज संस्थान
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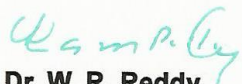


CERTIFICATE

This is to certify that Mr/Ms/Mrs/Dr Neito - U Mero
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has participated/presented a paper titled A Sustainable livelihood
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Case study of Panvati Village.

in the **"National Seminar to Mark the World day of Social Justice 2019 on Sustainable Development & Social Justice: Issues and way Forward"**
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